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Railway Age

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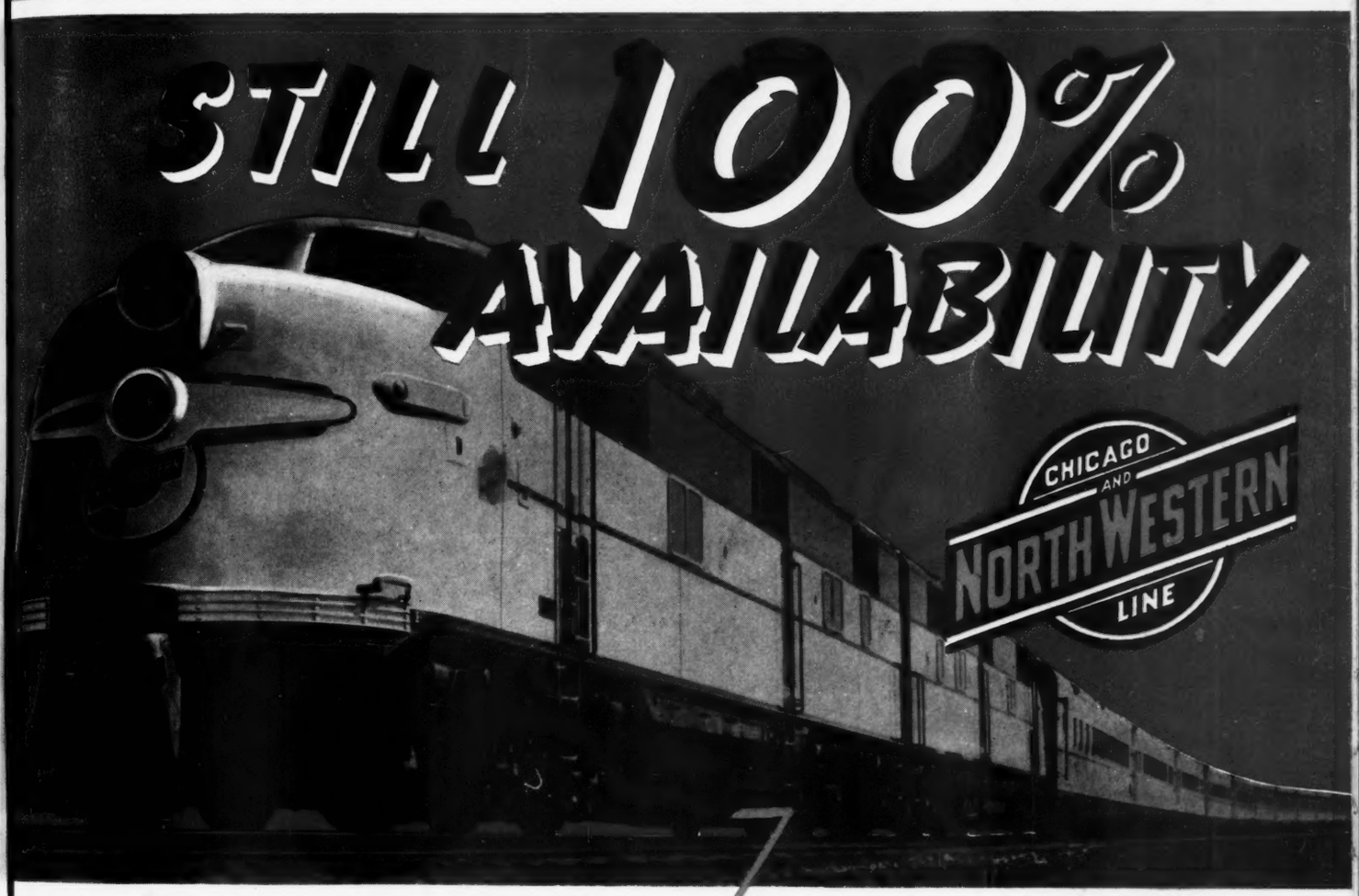

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FOR WATER AND LUBRICATING OIL TEMPERATURES

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Philadelphia

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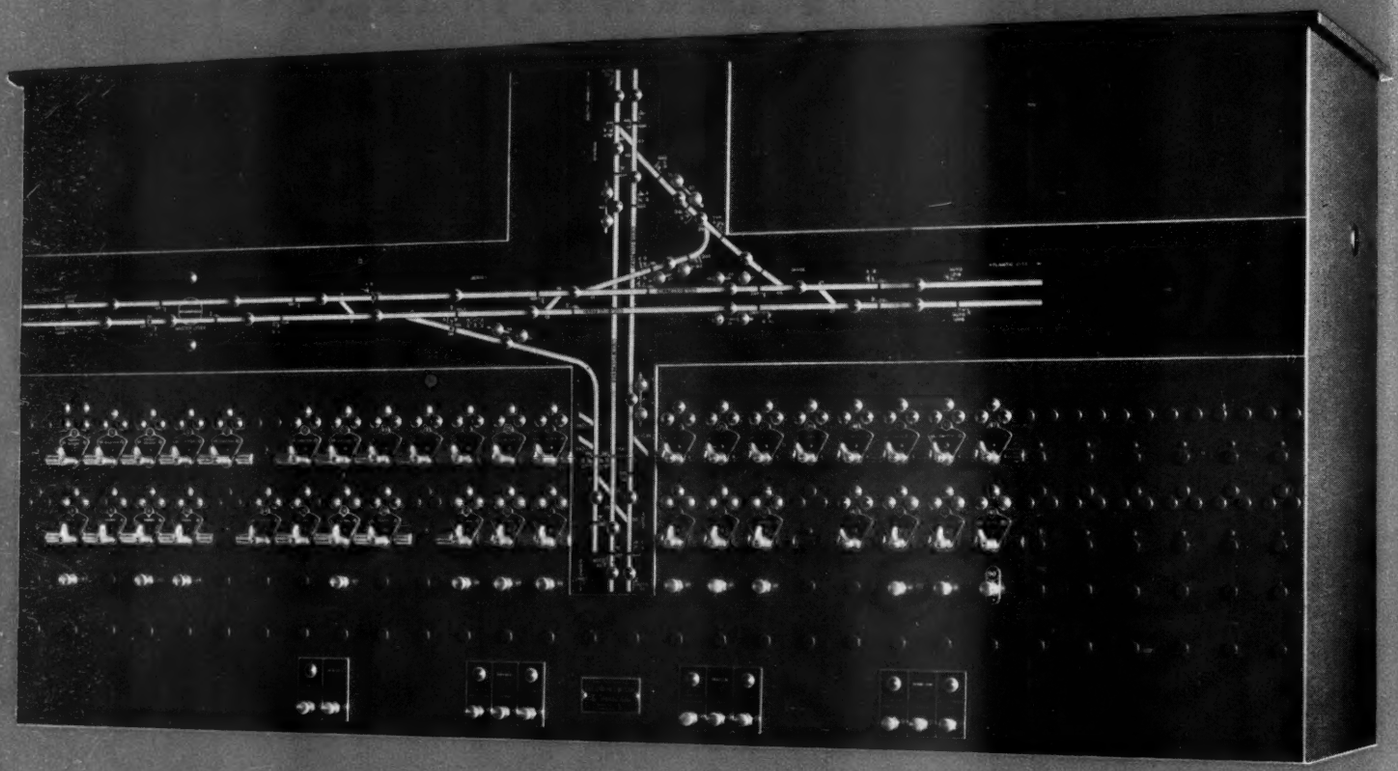
"Union" All Relay Interlocking



REPLACES FOUR PLANTS

THE control of the heavy traffic involved at complicated interlockings on one railroad, has been simplified by the installation of a "Union" All-Relay Interlocking System. This interlocking layout was formerly operated by two mechanical and two electro-mechanical interlocking machines while the new system utilizes one miniature lever control panel. Daily movements through this plant average 81 during the winter months and over 100 during the summer months. In addition to the traffic-handling efficiency, flexibility of operation and substantial economies are affected.

"Union" produces all types of interlocking and control systems. The type to be used to obtain the utmost efficiency and economy of operation, is dependent upon various factors, such as speed of switch operation, availability of a-c. or d-c. source of power, type of traffic, and installation and maintenance economy. "Union" engineers are qualified to assist in recommending the type of interlocking to employ in order to obtain maximum efficiency and economy. This can be predetermined by a survey of the layout and of the present as well as of future traffic requirements.

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SWISSVALE, PA.

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

RAILWAY AGE

"Featherbed" Pay Versus Old-Fashioned Principles

Some principles regarding the incomes that individuals should receive, and for what they should receive them, are the issues of honest controversy. It is a principle of free private enterprise that the incomes of all workers, whether with hand or brain, should be in proportion to the productiveness of their work—equal for equally productive work, unequal for unequally productive work; and that those who save and invest should be paid for the use of their invested capital. It is a principle of socialism that all workers, whether with hand or brain, should be paid equally or approximately equally regardless of inequalities in the productiveness and value of their work, and that nobody should derive a return from capital he has saved and invested. "From each according to his ability, to each according to his needs;" "service for use, and not for profit"—these are the doctrines of Marxist socialism. "Labor," the weekly paper owned and published by the railway labor unions, by plain implication indorses these doctrines of socialism by asking in a recent editorial, "Should one man be paid as much or more each month as the average worker gets for his entire lifetime of work?"

How Can Income Be Honorably Secured?

The conflict between these principles of private enterprise and socialism presents an issue on which men can and do honestly differ. But we cannot recall ever having heard or read any discussion favoring either private enterprise or socialism in which it was contended by anybody that any person, unless physically or mentally unfit for work or unable to get it to do, had a right to income for work or saving not done either (1) by himself or (2) by somebody else from whom he had legally derived the right to it. For anybody able to work to get income excepting by his own working and saving, or by the voluntary action of others who have worked and saved, always has been regarded in every society accepting the code of honor heretofore prevailing in the United States as dishonorable, immoral and even illegal. Under our constitution, as heretofore interpreted, it has been illegal for one person, or group of persons, or the government itself, to seize the property of any man or group of men without "due process of law," including just compensation; and our laws have made it criminal for any man or group of men to take the money or property of any other man or group by force or threats of force.

Let us apply these heretofore generally recognized and accepted moral and legal principles to certain things that are now being constantly done in this country, in some instances with widespread condemnation, but in others with almost no condemnation.

Demanding a Million Dollars for Doing Nothing

Westbrook Pegler, the famous newspaper columnist, has been month after month citing examples of men with criminal records holding powerful positions in the American Federation of Labor and the Committee for Industrial Organization, who have been using these positions to blackmail large amounts of money from both employers and members of labor unions—men some of whom, owing to Pegler's exposures, have been sent to prison. It is generally assumed that nothing of this kind can be charged against railway leaders and railway labor unions. But, as a matter of cold fact, it is easily demonstrable that the so-called "featherbed" working rules are being as truly and effectively used by labor unions to get money from the railways for work not done, and even as a pretext for blackmailing the railways, as other methods are being used for similar purposes by labor leaders and labor unions in other industries.

Take a case recently cited in a statement to the public by Charles E. Johnston, chairman of the Western Association of Railway Executives. He said: "In 1932 when business had so declined that only about 3½ hours' switching per day was required a railway discontinued assignment of a yard crew at a certain town, and thereafter road crews did the switching at that place. From then until June, 1937, no claim was made that either the yard crew or the train crews should receive additional pay because of such discontinuance. In January, 1941, however, a decision by the adjustment board ordered the railway not only to pay the **yard** crew a day's wage for each day during the nine years following 1932 that the **train** crews did switching, but also to pay the **train** crews a day's wage at yard rates in addition

to their regular wages for every time they did any switching."

Would This Be Blackmail?

The total amount the railway was in this case ordered to give the employees as so-called "back pay" for work not done was about one million dollars. The railway has not yet settled the claim. Why does it not appeal it to the courts? Because under the Railway Labor Act a railway has no legal right to appeal to the courts from a decision made by the adjustment board. The only way the case could be got into the courts would be for the railway to refuse to pay and for the employees, consequently, to sue it. But in not a single instance have the employees appealed any such case to the courts. Their union's method of enforcing such claims has been to "use their economic power"—that is, to **threaten strikes.**

The employees concerned in the case cited were paid full "standard rates" for all the work they did. By accepting without complaint for five years what they were paid they showed that throughout this period they agreed with the railway management that they were being given all to which they were entitled. They know, and the leaders of their unions know, they did not do a stroke of work for the large additional amount of money demanded for them. On the principles that should govern income which heretofore have been accepted by virtually all the people of this country, can it then reasonably and fairly be said that the labor leaders who have demanded this so-called "back pay," and the employees who have let it be demanded for them, have acted honorably? And if the railway should refuse to settle on their terms, and, instead of appealing to the courts, they should resort to threats of strikes to enforce their claims, what, then, would they be guilty of? Measured by the standard always heretofore—until recently at least—accepted in this country, a man who tries to get money for which neither he nor anybody else has worked is a scoundrel; and if he resorts to force to get it he is a blackmailer.

"Legal" Methods Never Tested in Court

And it has never made any difference in most people's opinions of such methods that they were legal. Indeed, no other class has made louder outcries than leaders and members of labor unions against capitalists and managers of business for getting money by **legal** methods, if and when the leaders and members of the unions have regarded the methods used as, nevertheless, economically or morally indefensible. Just why, then, should the long list of officers of other labor unions that Mr. Pegler has exposed for using cunning or force to get money not earned be condemned by public sentiment, while leaders and members of railway unions who use such methods as have been described to get money not earned should be regarded as honorable citizens engaged only in trying to promote the cause of "social justice?"

There long has been loud complaint from railway sources regarding "featherbed" rules and interpretations of them resulting in the railways being required to make large payments of money not earned. This money does not grow on trees or rain down like manna from heaven. It is taken from persons to whom it has rightfully belonged—from payers of railway rates, owners of railway securities, or both. If railway managements owned the railways they would have a right to give the money away without a struggle. But railway managements don't own the railways, and, therefore, have no moral right, and a very doubtful legal right that has never been passed on by the courts, to make large payments for work not done merely because the labor unions demand it and the adjustment board orders it.

Railways Propose Eliminating Some "Featherbed" Rules

Wishing to use the earnings of the railways in paying for needed real work and for needed equipment and materials, and also to be relieved from the dubious position in which they have been placed, managements of the railways in all the three large territories recently have proposed to the unions the elimination of a part, or many, of the "featherbed" rules. The western railways have proposed the elimination of the largest number, but not of all; for they have not proposed elimination of the "dual basis" of pay—"miles or hours, whichever makes the more"—in train service which has become, owing to the great increases in train speeds, the most flagrant "featherbed" of all.

Examples of the ways in which the "featherbed" rules sought to be eliminated operate to cause payments, and in many instances very large payments, for little or no work could be cited almost without end. Chairman Johnston of the Western Association of Railway Executives in his statement already quoted said: "There have been more than 300 cases throughout the country in which railways have been ordered to pay in the aggregate many hundreds of thousands of dollars of this extra 'back pay' to train and yard employees who"—as in the case cited above—"had already been paid for a day's work or who actually had done no work at all for it." In some of these cases the so-called "back pay" for **work not done** awarded to individuals has amounted to **as much as $40,000!** We outline below some examples of other kinds:

Some Examples of "Featherbedding" for Income

A local freight train crew was required to stop at a point intermediate to the beginning and end of its run, where there was no switch engine crew on duty at the time, to set out three cars from its train, put three other cars in its train, and move certain cars standing on a siding in order that they might be unloaded. For this service each member of the train crew claimed pay at yard rates. An extra yard foreman and switchman who were not on duty, and performed no service whatever,

also claimed a day's pay because of not having been used to do this work. The work required fifteen minutes, and was the kind ordinarily required of local freight crews for which they receive a rate of pay higher than the rate paid to crews not required to do this kind of work. The adjustment board granted the claim of the local freight crew, and also awarded the two extra yardmen who performed no service whatever a day's pay for not having been used to do this work.

A railroad was ordered to pay a penalty of **12 hours' wages** for fifteen minutes' work on each day from 6:15 a. m. to 6:30 a. m. simply because the employee began work before 6:30 a. m.—and this "penalty" payment was **in addition to the 8 hours' regular wage that had to be paid** for the 7 hours and 45 minutes work done from 6:30 a. m. to 2:15 p. m.

Three Days' Pay for One Day's Work for Three Years

A regularly assigned fireman made a round trip of 50 miles. On the first leg of the trip the train carried only passenger cars. At the turning point the crew was required to back its passenger cars to a point where the engine was turned and given necessary attention by the enginehouse forces. Returning, the train carried only freight cars back to its starting point. The adjustment board held that the fireman was entitled to three days' pay—for (1) a day in **passenger** service for hauling the passenger cars from the initial terminal to the turning point; (2) a day as **hostler** for taking the engine to the enginehouse; and (3) a day in **local freight service** for taking the freight cars back to the starting point. And, furthermore, the board held that **all other firemen who had performed similar service on that train over a preceding period of three years** were entitled to "back pay" on the same basis.

Yard engine firemen were required to take water on their engines at a point at which water had previously been taken on them by shop men. The firemen protested and claimed a day's pay for the extra work. The claim was sustained on the ground that the firemen had been required to perform service involving a change in operating practice.

Prior to 1932 a hostler and his helper at a certain point handled all passenger engines and equipment between the passenger station and the coach yard. In that year certain freight business not previously handled was moved to that point and an additional yard engine was added there. The railroad, having the service of this yard engine available, stopped the practice of moving the passenger engines by hostler and had them towed between the enginehouse and the passenger station by the yard engine. The hostlers who were thus displaced presented a claim to the board for restoration of the hostler and hostler helper positions. The board sustained this claim, holding that the abolition of hostler positions was a violation of the hostlers' right to work which belonged to them, and ordered the restoration of the positions and **compensation of the displaced hostler and hostler helpers for the entire five years during which the positions had been abolished.**

Extra Pay for Hauling Employees' Own Supplies Free

On a certain railroad it had been the practice for more than 35 years for a work train to deliver groceries, foodstuffs, and similar supplies to **employees** located through the forest preserve in the Cascade Mountains where there were **no stores or other means** of securing supplies. These supplies were carried **without charge** as company freight on the work train, as the carrier did not operate local passenger or local freight trains and could not properly stop its transcontinental passenger trains for such a purpose. The engineer of the work train claimed that he must be paid at the local freight rate; and the claim was sustained on the ground that, although the carrier was under no obligation to carry the supplies for its employees, and **did so without charge,** as a matter of grace, it had converted its work train into a local freight train **as if the supplies were revenue freight.**

In another case the same railroad hauled on a passenger train an express refrigerator car equipped for passenger service, and for 25 years followed the practice of carrying in this car articles for which the shippers were billed at the freight rate. **The train crew did no work whatever** in connection with the handling of these articles, which were placed in and taken out of the car by station forces. Nevertheless, the train crew presented a claim for payment at the **freight train rate of pay;** and the claim was sustained on the ground that "the character of the commodities shipped and the revenue derived determines the class of service." In this case the fact that the articles carried **produced freight revenue** was used as the ground for holding that the crew must be paid the freight train rate; although in the case **on the same railway** just previously outlined the fact that the articles carried **produced no revenue** was held to be immaterial.

Floods Stop Work—But Not Pay

A schedule provision required carriers formally to notify employees of the cancellation of assignments. During the great floods which devastated the Ohio and Mississippi valleys several years ago not only were certain yard engine assignments rendered impossible of fulfillment by flood conditions, but owing to these conditions it was impossible to get the notice to the employees, and it would have been impossible for them to have reported for duty, anyway. Nevertheless, claims for lost wages were sustained on the wholly technical grounds that (1) the carrier did not formally cancel the assignments, and **(2) the schedule contained no express exception to cover such an emergency condition as that created by the flood.**

The numerous methods being used by the labor unions in getting from the railways large amounts of money not earned that are illustrated by the foregoing examples are the outgrowth of working rules agreed upon years ago to provide extra pay for real extra work and to penalize the railways in cases of abuse of their real or assumed authority by railway officers. The power formerly possessed by railway officers now, however, has been largely transferred to the labor unions; and, with the aid of the adjustment board, it is being abused by them to an extent which makes its former abuse by railway officers paltry and virtuous by comparison.

"Featherbedding" Grows by What It Feeds On

It is inconceivable how any person not utterly prejudiced or completely dishonest could defend such means of getting money. Their successful use not only diverts to men, who have not earned it, large amounts that the railways need for hiring other men to do real work and for buying equipment and materials; but it provides examples of how to get "easy money" which tend to spread demoralization among all railway employees, inciting them to try to get money for little or no work and making them feel they are unfairly discriminated against when they do not get it. That the more the unions get by "featherbedding" the more they are sure to try to get by it is illustrated by some of their most recent demands—such, for example, as for the employment of four, six or even eight engineers and firemen on Diesel locomotives heretofore satisfactorily operated by one engineer and one fireman.

Railway managements have taken a step toward the elimination of "featherbed" rules; but they have repeatedly gone that far before and then stopped. They obviously should in this instance insist upon needed changes in rules and in their interpretation being considered simultaneously with advances in wages. For

some years so much condemnation of "featherbedding" has emanated from railway officers that a large part of the public has gained the impression that it causes even more costs and wastes than it does. Regardless of that, it does cost very much too much; it is demoralizing and ethically and economically indefensible; as long as it is allowed to continue it will tend to increase; and the railways cannot hope for a public sentiment that will support their rightful claims to fair treatment if they keep on talking and complaining about "featherbedding" and don't really do anything about it.

We know what the labor leaders will say about this editorial. They will repeat what they have so often said before. The substance of their reply will be "You're another." They will refer to past real or alleged abuses in railway management, especially financial. Probably they will again characterize the *Railway Age* as "the pampered unofficial organ of the railways."

The Jensen Proposals on Class Rates

The study "Some Suggestions for Improvements in Railroad Class Rates" by C. G. Jensen of the I. C. C. staff—introduced in the general rate hearings at St. Louis on July 11—merits serious consideration by all students of freight rate construction. For instance:

"The writer was among those who believed until perhaps ten years ago that the rate structure of the South and West was built upon sounder lines and served the needs of the public better than that in Official territory. It seemed to him altogether desirable that increases be made in the Eastern rates for valuable commodities as to which the freight charges at most represent but a negligible part of the price paid by the ultimate consumer, in order that reductions might be made in the rates for coal, ore and kindred commodities upon which transportation costs always bear so heavily.

"But the past decade has witnessed the advent of large-scale commercial highway transportation, and the competition which the railroads are meeting and must in the future continue to meet from that source sets at rest any previous doubts as to the mould in which the rail-rate structure must be recast. Moreover, it permits that remoulding to be accomplished in less time and by fewer stages than would formerly have been required, for there are today but few industries which must look solely to the railroads for their transportation needs.

"Capital and other overhead charges which vary but little with the volume of traffic carried represent a substantial part of the total cost of operating and maintaining a railroad, and the value-of-the-service theory in railroad rate-making means, or should mean, merely that these overhead costs are distributed among the different kinds of traffic in accordance with their ability to pay. Every form of traffic should pay its direct out-of-pocket costs in full, plus at least a small contribution to overhead costs—although the ascertainment of out-of-pocket costs is itself rather an elusive business.

"With highway carriers, on the other hand, direct operating costs constitute a considerably larger proportion of their total costs. A highway carrier may not know when he undertakes to haul a given commodity from one point to another how much it will cost him, but if the traffic is offered to him regularly he soon learns whether the operation is profitable or not.

"The traffic of very few highway carriers is sufficiently diversified to enable them, if they so desired, to carry part of it at a loss and compensate themselves by extra profits on the remainder. They cannot, as the railroads have done in the past, put part of the cost of carrying long-haul traffic onto the short-haul shipper, or part of the cost of carrying low-grade traffic on high-grade traffic. Waiving the question of whether it would be lawful for a highway carrier to make rates in that manner, any operator who undertook to do so would very probably find before long that only his unprofitable business remained to him and that he had lost his extra-profitable business to private or contract carriers, or perhaps to other common carriers who had made their rates with closer reference to the actual cost of the service.

"Nevertheless earnest efforts have been made and are still being made to build up a system of common-carrier truck rates modeled after the railroad rates. Possibly those efforts will succeed, but to this writer there appears no prospect that they will or can."

To the extent to which a so-called "monopoly" is actually one in fact, it may largely disregard competitive considerations in its price-making (but even a monopoly provokes public condemnation and invites disintegration if it is too arbitrary). For anybody to try to apply a monopolistic *"should"* to freight rates today, in defiance of the competitive *"is,"* constitutes a case of slow poisoning of common carrier transportation; and not so slow, at that.

Mr. Jensen's monograph also indicates that the Commission needs to be, at least, more flexible in its consideration of competitive pricing problems, and particularly with respect to the prescription of minimum rates. It cites, among other illustrations, the Official Territory c. and d. case as an example, and states:

"The condition which the Commission attached to its approval of pick-up and delivery service in Official territory, namely, that the service be withheld from shipments paying a freight rate of less than 45 cents per hundredweight, does not seem altogether logical. The restriction necessarily comes into play only as to short-haul traffic, and it results in according pick-up and delivery service to light and bulky freight where the expense is greatest, and in denying it to heavy freight where the expense is least. It also makes difficulties as to mixed shipments of differently-rated articles, some subject to rates of less than 45 cents and others to rates which are higher.

"It is believed that a better safeguard against performance of the service at less than cost—assuming that pick-up and delivery service continues to be included in the freight rate—would be to withhold the service when the revenue from the shipment falls below a specified minimum, regardless of the rate or rates charged."

The study might also have pointed out that no such restrictions were placed upon motor carriers, notwithstanding that the cost studies of the California Commission, that of New England motor carriers and other similar investigations show that truckers' terminal movements are performed in substantially the same manner and under the same conditions as those of the railroads; that they often do not return the full average cost of handling; and, sometimes, do not even cover the out-of-pocket costs.

Well, unquestionably there have been abuses in railway management, financially and otherwise—including, at times, unfair treatment of employees. Furthermore, the *Railway Age* undeniably is a paper devoted to the railway and affiliated industries. But this paper is not an "organ" of all or any of these industries, official or unofficial; it never in any year of its long life has derived as much as 10 per cent of its gross earnings from the railways; every cent it has ever got from them has been for advertising and subscriptions; and anybody who asserts the contrary is a liar, and we can prove it.

But all this is beside the point. Evil and demoralizing practices are evil and demoralizing, regardless of whose practices they are. No man or organization can show that he or it is good by charging that some other man or organization is or has been wicked. No doubt "a vigorous offensive is the best defensive;" but it doesn't prove that those who throw stones don't themselves live in glass houses. There never has been, there never can be, any rational or decent defense offered for the existing "featherbed" railway working rules and the way they are being used to extort from the customers and security owners of the railways millions of dollars for people who don't do anything for it; and the sooner they are eliminated the better it will be for the public, for the railways and for the large majority of railway employees who are not benefited but victimized by them.

Steam vs. Diesel-Electric Power*

A discussion of the factors involved in the operation of both types of motive power—Several pertinent questions are answered

By E. E. Chapman,

Mechanical Assistant, Atchison, Topeka & Santa Fe

FOR a period of something over a hundred years, the steam locomotive has been developing on the American railroads, and up until about 1900 the progress was in producing more power by means of more weight on drivers, increased size of boilers and cylinders, boiler pressures raised from 50 to a maximum of about 225 lb. per sq. in. and improvement in valve motion. During this period the length of locomotive runs was generally from 100 to 150 miles.

High-pressure boilers with pressures up to 1,100 lb. per sq. in. utilizing tubular-type fireboxes were placed in service. However, to date the maximum pressure for conventional stayed-type fire-boxes has settled at about 310 lb. per sq. in. There are some water-tube fireboxes in service. Single-expansion articulated locomotives are still used for heavy-duty freight service, and repeat orders indicate that careful study has justified the continued use of such types of steam locomotives.

In the last ten or twelve years, the application of roller bearings to journals of passenger locomotives has gradually increased, and at present this type of bearing is entering the freight-locomotive field. Roller bearings have also come into use in valve-motion parts, and in main-rod and connecting-rod bearings. The benefit of such bearings is apparent on long locomotive runs with few stops, in that their use eliminates the need for servicing such parts en route.

The need for sustained power output at higher sustained speeds introduced a demand for high steam rates which resulted in the development of the coal stoker. This, in conjunction with increased boiler and firebox heating surface, has increased the steam-generating capacity of coal-burning locomotives to 80,000 to 100,000 lb. of steam per hour. This higher boiler output has also been accomplished by the adaptation of oil-refinery residuum as a locomotive fuel in sections of the country where this type of fuel oil is readily available.

The demand for higher sustained speed has brought about the use of tenders of 25,000 gal. water capacity where water is not taken from track pans with the train in motion. The New York Central which takes water from track pans has reversed this general practice and has reduced the water capacity while the coal capacity has been increased to 43 tons from a previous maximum of 28 tons. This allows longer locomotive runs between refueling points and the elimination of time lost by stopping and starting as well as time required to take fuel.

From time to time poppet valves have been applied to locomotives. A recent development of such a valve and the necessary operating mechanism has given a successful demonstration in both road and test-plant performance. The improved steam distribution is marked by an increase in power output with a decrease in steam consumption.

Electric and Diesel-Electric Locomotives Begin to Compete with Steam

With all the improvements in steam motive power, increasing demand for more horsepower and higher speeds provided the opportunity for the introduction of other types of motive power.

About three decades ago when the electric locomotive, which secures its power from outside sources, was developed, designers prophesied that within the next decade the railroads of the United States would purchase only electric locomotives for new power. While this prophecy has not been fulfilled, certain railroads in this country have electrified their motive power on selected parts of their roads. There are about 900 such electric locomotives in service at the present time. The heavy expenditures required for stationary power plants and

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power lines have limited such applications generally to heavy-traffic lines, or to locations where electric power was available from hydroelectric plants, or where power plants could be located at mine head to avoid expense of handling fuel.

From 1925 to 1935 a steadily increasing number of Diesel engines with electrical transmissions was placed in switching service. In 1935 a two-cycle Diesel engine of considerably less weight per horsepower was developed by the Winton Engine Company, which was later taken over by the Electro-Motive Corporation. Since then both two-cycle and four-cycle Diesel engines have been used extensively in switching locomotives. Most of the applications to passenger and freight locomotives to date have been two-cycle engines, but some four-cycle Diesel engines are now in passenger service.

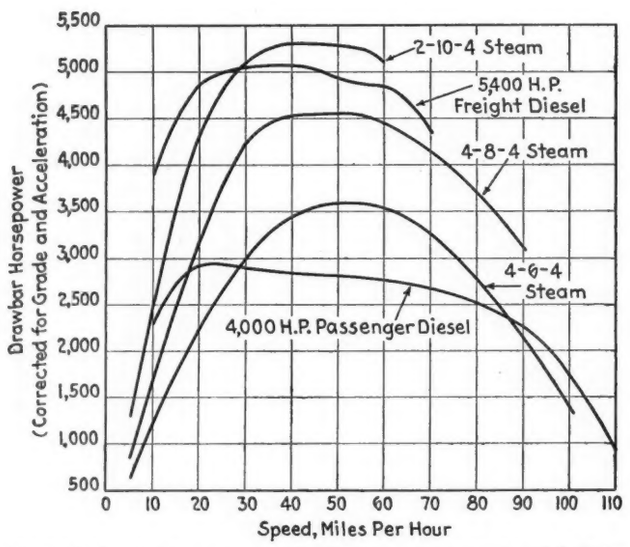
Since 1925, a total of about 1,300 switching, passenger, and freight Diesel-electric locomotives have been placed in service, of which approximately 35 per cent went into operation in 1940.

For the year 1940 only six steam locomotives were purchased for switching service. The remainder were purchased for passenger and freight service. A careful analysis of switching operation indicates that where locomotives can be utilized for two 8-hr. tricks per day or more, Diesel switching locomotives of 600 hp. capacity and above are justified. Where Diesel switching locomotives with 44 tons of weight on driving wheels can be used they can be justified for one-trick-per-day service.

Comparison of Diesel-Electric and Steam Locomotives

For comparative purposes the general dimensions and power performance characteristics of certain Diesel locomotives and comparable conventional steam locomotives are listed in Table I. Power performance data, i.e., drawbar horsepower on level tangent track, are shown graphically in Fig. 1.

The 4,000-hp. Diesel and the 4-6-4 type steam locomotive are essentially similar. However, it can be seen that at speeds below 29 m.p.h. and above 87 m.p.h., the 4,000-hp. Diesel has more horsepower available at the drawbar than the 4-6-4 type steam locomotive. The lesser weight of the 4,000-hp. Diesel locomotive is a distinct advantage also.



(Available drawbar horsepower on level tangent track, 4,000- and 5,400-hp. Diesel locomotives and 4-6-4, 4-8-4, and 2-10-4 steam locomotives)

Fig. 1—Power Performance of Diesel and Steam Locomotives

The 5,400-hp. Diesel locomotive is superior to the 4-8-4 type steam locomotive throughout its speed range. However, the 4-8-4 type steam locomotive is designed for a maximum speed of 90 m.p.h., while the 5,400-hp. Diesel locomotive is designed for freight service primarily with speed limited by motor restrictions and gear ratio to a maximum speed of 77 m.p.h. The 2-10-4 type steam locomotive develops more horsepower at the drawbar than the 5,400-hp. Diesel locomotive at speeds above 29 m.p.h. However, the marked superiority in drawbar horsepower of the Diesel locomotive at speeds under 29 m.p.h. gives it a distinct advantage not only in starting and accelerating heavy trains, but also in maintaining higher speeds on ruling grades.

It should be noted, however, that motor limitations restrict the loading of the Diesel freight locomotive on any grade to what it will handle at a minimum speed of 16 m.p.h. and for a Diesel passenger locomotive to what it will handle at 35 m.p.h. at which respective speeds motors can be operated at continuous rated output.

Table I—Principal Dimensions and Characteristics—Diesel vs. Steam Locomotives

	Diesel		Steam		
	4,000 hp.	5,400 hp.	4-6-4	4-8-4	2-10-4
Length, over-all, ft.-in.	141-7½	193-0	102-6¾	112-1¼	113-6⅝
Total wheel base, ft.-in.	117-1	177-0	88.8	98-2½	100-3¾
Rigid wheel base, ft.-in.	14-1	9-0	14-6	13-10	19-3
Weight, total, lb.	626,200	923,600	808,626	895,846	934,766
Weight on drivers, lb.	426,800	923,600	213,440	286,890	371,990
Wheels, number and diameter, in.:					
Engine truck	8-36	.....	4-37	4-37	4-37
Drivers	16-36	32-40	6-84	8-80	10-74
Trailer truck	.....	.....	4-40	4-40	4-40
Tender	.....	.....	12-37	12-37	12-37
Fuel-oil capacity, gal.	2,400	4,800	7,000	7,000	7,000
Boiler, water capacity, gal.	2,900	.....	21,000	21,000	21,000
Cooling, water capacity, gal.	600	900	.....	.....	.....
Lubricating-oil capacity, gal.	520	700	.....	.....	.....
Starting tractive force, lb.	106,700	220,000	49,300	66,000	93,000
Factor of adhesion	4.00	4.20	4.33	4.35	4.00
Drawbar horsepower at m.p.h.:					
10	2,270	3,870	1,210	1,670	2,430
20	2,930	4,850	2,240	3,170	4,340
30	2,910	5,040	2,990	4,230	5,100
40	2,840	5,070	3,450	4,530	5,310
50	2,810	4,930	3,600	4,550	5,280
60	2,760	4,720	3,550	4,450	5,120
70	2,680	4,400	3,270	4,160	....
80	2,510	....	2,790	3,720	....
90	2,260	....	2,160	3,120	....
100	1,750	....	1,400	....	....
110	950	....	....	....	....

It should be noted, however, that motor limitations restrict the loading of the Diesel freight locomotive on any grade to what it will handle at a minimum speed of 16 m.p.h. and for a Diesel passenger locomotive to what it will handle at 35 m.p.h. at which respective speeds motors can be operated at continuous rated output.

Advantages and Disadvantages of Diesel Locomotives

The advantages claimed for Diesel locomotives over the conventional steam locomotives are high thermal efficiency; lower water costs; high utilization—greater flexibility; reduction of delay due to taking fuel and water; higher sustained speeds; lower stresses imparted to track structure and dynamic braking.

The disadvantages are, high initial investment; lower life expectancy; demand for higher degree of maintenance; higher unit cost of fuel, and higher cost of lubrication.

Thermal Efficiency

A comparison of over-all thermal efficiency—ratio of power output at drawbar to heat content in fuel—shows the Diesel locomotive to have an average thermal efficiency of 26 to 28 per cent, while comparable modern steam locomotives have a corresponding thermal efficiency of 6 to 8 per cent. Because of this, there is a twofold advantage for the Diesel locomotive in that there is a reduction in the amount of fuel necessary to carry

and an increase in the length of operation between refueling.

On steam locomotives lower water cost is an item of some importance. The average water cost for a steam locomotive is approximately ten per cent of the fuel cost. On Diesel locomotives, water is a relatively small item even on passenger Diesels where steam generators are used to furnish steam for heating or for air-conditioning passenger trains. The amount of water required for this purpose is only about one-tenth of the total water used for all purposes by a steam locomotive in the same service, so that for passenger Diesel locomotives water costs will be not over one-tenth that for steam locomotives. For freight Diesel locomotives water costs are practically negligible.

Utilization and Flexibility

Utilization may be measured in two ways. For passenger and freight locomotives, the mileage per locomotive per year indicates directly the relative utilization. For passenger Diesel locomotives, the average mileage per year is 250,000 with a maximum monthly mileage of 27,000, as compared with 180,000 miles per year and a high monthly mileage of 18,000 to 19,000 for modern steam passenger locomotives. At the present time Diesel passenger locomotives are largely assigned to definite runs, for which their availability has proved to be 95 to 99 per cent. In switching service, utilization is usually measured by hours of service performed out of total monthly hours. In this service generally Diesel switching locomotives have a very high utilization factor.

The Diesel locomotive has a greater flexibility in that the locomotive may be accommodated to the train to be handled. On long runs over varying grades, one or more engines may be cut out entirely on lighter grades, where not necessary and cut in for work in mountainous territory. This flexibility also permits of some inspection and light maintenance of engines while en route to keep

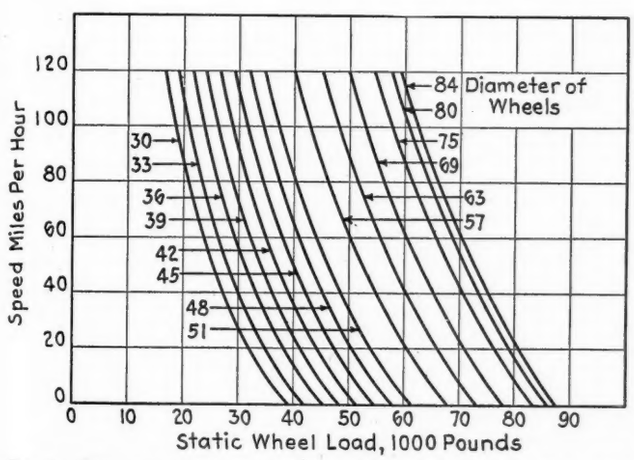


Fig. 2—Allowable Load on Rail for Wheels of Various Diameters and Speed at Which Maximum Shear Stress of 25,000 Lb. per Sq. In. in Potential Shatter-Crack Zone of the Rails Will Occur—Wheels With No Unbalanced Forces

them in first-class condition at all times. Where locomotives are in multiple units it is possible to use the minimum number of units required on level territory and add necessary units for work on heavy ascending grades.

Reduction in Delays

The reduction in delay time due to taking fuel and water is a distinct advantage for the Diesel locomotive. The ability of the Diesel locomotive to run long distances between fuel and water stations as compared with steam locomotives is an important consideration in long transcontinental passenger runs and also in the operation of expedited schedule freight trains.

Higher Sustained Speed

The reduction in delay time in stopping and starting for taking fuel and water permits of higher sustained speed without the necessity for running at high maximum speeds. In addition, the high available drawbar horsepower in the lower speed range gives the Diesel locomotive an advantage in that considerably less time is consumed in accelerating to the speed required to make schedule time. Faster schedules are thus maintained at a more nearly uniform average speed and a lower maximum speed. The rapid acceleration of the Diesel locomotive at low speeds is a distinct advantage in freight service in that less time is required to accelerate to speeds of 16 m. p. h. or above where the continuous rating of the locomotive is utilized.

Lower Stresses in Track Structure

The stresses imparted to track by prime movers is an increasing concern to the management of railways. Diesel locomotives, which have no unbalanced weights in their wheels, remove the danger of kinking rails. However, with such locomotives able to travel at speeds up to 120 m. p. h. in passenger service, it is well to be sure that wheel diameters and wheel loads be so proportioned that shearing stresses in the head of the rail, and particularly in the potential shatter crack zone, be kept within prescribed limits.

Such limits are derived by mathematical computation of Hoersch and Thomas in Bulletin 212 of the University of Illinois, and in computation of shear stress by the Rail Committee of the American Railway Engineering Association, published in Vol. 42 of the Annual Proceedings of that society. The limits used are 67,000 lb. per sq. in. maximum shear stress ⅛ in. below the surface of the rail, and by keeping to this limit the shear stress in the zone of the rail where shatter cracks occur will be limited to a maximum of 25,000 lb. per sq. in. Test results have shown that a maximum shear stress of 25,000 lb. per sq. in. in the potential shatter-crack zone will protect against propagation of transverse fissures from shatter cracks.

Fig. 2 shows the permissible static weight on rail and speeds at which limiting shear stress is reached for wheels having no unbalanced forces. The static weight is shown for zero speed as derived by the method already given. For any speeds the limiting static wheel load is computed by an empirical formula developed by G. M. Magee, research engineer, American Railway Engineering Association, from data on stresses in railway track published by that association. This formula is based on speed effects due to track and wheel irregularities and is as follows:

$$\text{Speed effect} = \frac{(0.33S)W}{D}$$

in which S = speed, m.p.h.
in which D = diameter of wheel, in.
in which W = static wheel load, lb.

This formula may give computed impact loads that are higher than actual, particularly with smaller wheels without unbalanced forces. While this penalizes the locomotive unduly, it has the virtue of affording a greater margin of safety against damage to either rail or wheel.

An analysis of Fig. 2 shows that with wheels having an original diameter of 36 in. the maximum static wheel load should be 23,500 lb. with the locomotive confined to

a top speed of 100 m. p. h. or 21,500 lb. with a top speed of 120 m. p. h. When 36-inch diam. wheels are worn to the limit they are only 32¼ in. in diameter, and for this diameter, maximum static wheel loads to hold shear stresses within prescribed limits should be about 20,000 lb. for a top speed of 100 m. p. h., and about 18,500 lb. for a top speed of 120 m. p. h. This would indicate that passenger Diesel locomotives with 27,000-lb. wheel loads on 36-in. wheels may set up shear stresses beyond the prescribed limit when operating at the higher speed range. There is very little variation in wheel loads on Diesel locomotives, about the same weight being carried at all times. In order to protect against potential rail damage it is advisable to use larger wheels, which would be an advantage to both wheels and rails. On freight Diesel locomotives that have just gone into service, with top speeds of 77 m. p. h., wheel diameters are nominally 40 in. and wheel loads 29,000 lb. This is just within the limit set for maximum shear stress, but allows no margin for possible additional weight owing to weight-adding improvements that may be justified.

The same condition exists with steam locomotives for wheels that have no unbalanced forces. However, on late designs of steam locomotives, engine-truck wheels carrying a 23,000-lb. load have been increased to 42 in. diameter, which would permit a static wheel load of 29,000 lb. for a maximum speed of 100 m. p. h. Similarly, trailer-truck wheels carrying 29,000 to 30,000 lb. are of 50 in. diameter, which permits of maximum static wheel load of about 35,000 lb. at a speed of 100 m. p. h.

On locomotive tenders, eight-wheel trucks have been used and 42-in. wheels are contemplated with wheel loads of 29,000 lb., tender fully loaded, and 12,500 lb. empty. It is only for a short period of time that a full load of fuel and water is in the tender so that the loaded weight given should not develop shear stresses in wheels and rails in excess of the prescribed limit at higher speeds.

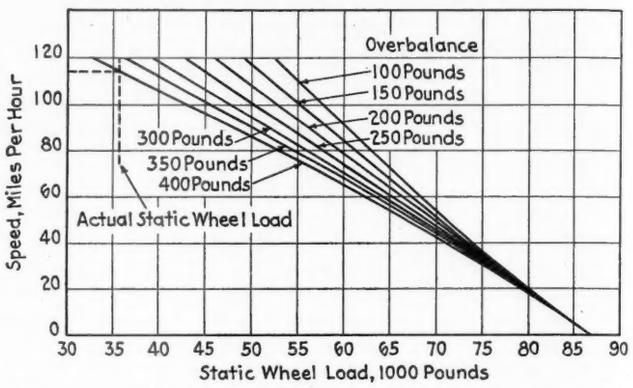
Under steam-locomotive driving wheels, dynamic augment due to overbalance in wheels adds another complication to the problems of stresses in track.

Fig. 3 shows the maximum permissible static load with overbalance at various weights and for different speeds from zero to 120 m. p. h. for a 4-6-4 type steam locomotive having 84-in. drivers, cylinders 23½ in. by 29½ in., and an actual static weight on drivers of 35,600 lb. It is apparent that for a maximum speed of 100 m. p. h. there is a margin of safety of about 25 per cent with the heaviest overbalance 400 lb. At 120 m. p. h. there is some margin of safety for overbalances not in excess of 350 lb.

Fig. 4 shows similar information for a 4-8-4 type steam locomotive having 80-in. drivers, cylinders 28 in. by 32 in., and actual static wheel loads of 37,500 lb. The graphs show that for this locomotive the static wheel load of 37,500 lb. plus the dynamic augment for 400 lb. overbalance will probably produce shear stress in the shatter crack zone of the rail that will be just within the prescribed stress at a speed of 100 m. p. h. With 150 lb. overbalance there is a margin of safety of about 38 per cent, with a static wheel load of 37,500 lb.

Dynamic Braking

The development of the freight Diesel locomotive has reintroduced a method of braking, or rather of controlling speed of, freight trains on long descending grades. Dynamic braking is essentially the utilization of the power in the locomotive to hold the train by reversing the direction of the field current, by means of which motors are converted into generators and the current generated is dissipated through resistance grids mounted on the roof in the form of heat which is absorbed by an air cooling system. This is similar to the regenerative braking on electric locomotives, in which the current generated is fed back to the power source. The dynamic brakes are designed to hold at a definite speed on a descending grade the same train weight that the locomotive could haul up the same grade at the same speed. In actual operation, on descending grades, train weight is usually heavier and



(4-6-4 type locomotive, 23½-in. by 29½-in. cylinders, 84-in. drivers, actual static wheel load 35,600 lb., variations in overbalance as indicated)

Fig. 3—Maximum Static Wheel Load on Driving Wheels at Various Speeds for Limit Shear Stress of 25,000 Lb. per Sq. In. in Potential Shatter-Crack Zone of Rails

speeds maintained are higher than on the same grade ascending, so that for controlling such trains some assistance for the dynamic brake is required from the train air brakes. In trials of this brake on various grades, the amount of train air braking required was reduced to approximately one fourth of that required by conventional braking with train air brakes. The possibility for reduced maintenance owing to less wheel and brake-shoe wear is of sufficient importance to encourage further development of this brake for locomotives in mountain service. There is also a direct challenge to the steam-locomotive designers for some similar method of braking. A possible method would be in utilization of cylinder compression, the heat of compression being dissipated by evaporating water into steam.

High Initial Investment

In any discussion of disadvantages of the Diesel locomotive, the question of cost of initial investment is an important consideration in comparing Diesel against steam locomotves. Recent improvements in production methods and increasing numbers in production have gradually lowered the cost per horsepower of Diesel locomotives to approximately $87.50, while for steam locomotives of comparable horsepower costs are approximately $35 per horsepower. The higher initial cost is partly offset by the greater utilization of the Diesel locomotive, which helps to keep down the overhead cost per mile of operation.

Lower Life Expectancy

With no background other than experience in the automotive industry, the life expectancy of the Diesel engine has been estimated at a relatively lower figure than for steam locomotives. Depreciation rates are based on an assumed expectation of 15 years of service for road Diesel locomotives, and 20 years for switching Diesel locomotives, against an accepted figure of approximately 28 years for steam locomotives. Experience gained from the continued use of Diesel locomotives in all kinds of

service may justify an upward revision of the life expectancy at some future time. Meanwhile the low assumed figure is a definite handicap because of the resulting increased overhead charge.

Demand for Higher Degree of Maintenance

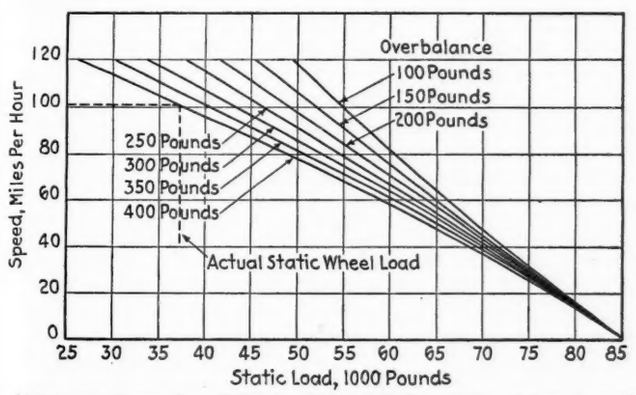
The close tolerances on numerous parts together with the complications owing to interlocking of electrical and mechanical equipment call for a higher degree of maintenance of the Diesel locomotive. On the other hand, refinements in steam locomotives such as roller bearings, improved counterbalancing for higher speeds, and additional auxiliary equipment that requires close maintenance for efficient operation add to the amount of necessary maintenance on this type of motive power. The use of road maintainers on Diesel locomotives is in question; some railroads operating Diesel locomotives consider such maintainers as an unnecessary expense. There is a direct additional operating charge where road maintainers are used, but this has been justified.

The use of maintainers on Diesel locomotives has helped to keep maintenance costs to a minimum, in that prompt attention when necessary has forestalled costly breakdowns on the road and has provided an intimate knowledge of work requiring immediate attention at terminals. The actual comparative maintenance costs of the two types of motive power are nearly equal considering that no cost records are available for general shopping of Diesel locomotives and there is a question of necessity of general shoppings for Diesel locomotives.

The lack of specially trained men and necessary equipment has been a handicap as far as keeping down cost of maintenance on the Diesel locomotive, but this handicap is rapidly being eliminated.

Higher Unit Cost of Fuel

The lower fuel consumption of the Diesel locomotive is somewhat offset by a higher unit cost of fuel, but in spite of the higher unit cost, the net cost of fuel consumed per unit of power developed is approximately one half to two thirds that of unit fuel costs of comparable steam locomotives. In localities where unlimited quantities of good quality steam-locomotive coal are available at low cost and with little transportation requirements, the foregoing comparison might not hold good. Similarly, those railroads that are close to oil fields and refineries that can offer large quantities of residuum fuel oil at low cost cannot always justify use of the higher priced Diesel fuel oil. Conversely, in some localities where there is a scarcity of fuel, the saving in transportation charges because of the much smaller quantity required will justify the use of the Diesel locomotive because of fuel saving.



(4-8-4 type locomotive, 28-in. by 32-in. cylinders, 80-in. drivers, actual static wheel load 37,500 lb., variations in overbalances as indicated)

Fig. 4—Maximum Static Wheel Load on Driving Wheels at Various Speeds for Limit Shear Stress of 25,000 Lb. per Sq. In. in Potential Shatter-Crack Zone of Rails

The operation of Diesel locomotives requires that fuel-oil specifications be held within a close range, which accounts in part for the higher unit cost of fuel. In the adoption of Diesel motive power exclusively, it must be remembered that other fuels are eliminated from competition. This is not the case with the steam locomotive, since with this prime mover the competitive condition existing between coal and fuel oil tends to keep unit costs at a reasonably low level. Any abrupt change in the price of either fuel immediately justifies a change by adapting the steam locomotive to burn the lower-priced fuel.

Higher Cost of Lubrication

The over-all cost of lubrication is definitely in favor of the steam locomotive. The quantity of lubricating oil required, as well as higher price, makes the net cost approximately double for the Diesel locomotive as compared with the steam locomotive. With either type of power, the lubricating cost is a relatively small percentage of the total cost of operation.

Accomplishments of Diesel Locomotives

A résumé of what has been accomplished by Diesel-locomotive operation in main-line service is as follows:

1—The schedule time for passenger service between important terminals has been reduced. There has been a steadily increasing number of higher-speed passenger trains placed in service by various railroads, all of which have proved to be popular with the traveling public. Incidentally, some railroads which inaugurated higher-speed service utilizing steam motive power initially have since changed to Desel power for this fast service.

2—In freight service, it has been possible to increase both the tonnage hauled and the average speed between terminals. The power performance particularly in lower speed range has made it possible to operate trains over most ruling grades without need for helpers or for double heading.

3—In bad weather with adverse rail conditions, the Diesel locomotive, because of uniform torque on driving wheels and distribution of available tractive force over a greater number of driving wheels, has demonstrated its ability to maintain schedules without reduction in weight of train handled.

4—The Diesel locomotive has shown the possibility of long locomotive runs, with very little service required at intermediate division points. It has directed attention to the fact that the only economical operation is obtained from motive power that is moving. Indirectly, attention has been focused on terminal delays to freight trains and the need for improvement in getting trains through divisional terminals.

5—It has stimulated the energies of the steam-locomotive designers to develop steam motive power with performance characteristics to compete with those of the Diesel locomotive. At the present time there is a need for an all-purpose Diesel locomotive that can be utilized in either freight or passenger service, and which will fit with steam-locomotive helpers where such helper service is required.

In conclusion, it would be farfetched to intimate that the Diesel locomotives will displace steam locomotives altogether in railroad service, but they are definitely a

part of the picture. As more and more of them are built, there undoubtedly should be a decrease in the unit cost. This will narrow the gap now existing in the relative initial investment of the Diesel versus the steam locomotive. At the same time, it is to be expected that competing steam locomotives will have considerably improved performance characteristics to match those of the Diesel locomotive.

Discussion

In discussing Mr. Chapman's paper, S. Withington, electrical engineer, N. Y. N. H. & H., said, in part: "In comparing the data in Fig. 1 it is noted that the *drawbar horsepower* of the nominally rated 4,000-hp. Diesel passenger locomotive is maximum at about 2,900 hp. and of the nominally rated 5,400-hp. freight locomotive is maximum at about 5,100 hp. These drawbar horsepower data are apparently not entirely consistent. In rating locomotives of all kinds a distinct advance would be gained if definite agreement could be reached as to just what is meant by a horsepower in each case.

"The author indicates that certain Diesel switching locomotives can be justified in service as little as one trick per day. It is quite possible that, considering high standby losses and expensive enginehouse service with steam locomotives, Diesel switchers may possess advantages in one-trick operation which may be even more important than where more intensive use is involved.

"The high initial investment of Diesels is discounted in yard switching service by the fact that the utilization of horsepower is such that a Diesel locomotive very much lower in normal rating will perform equally well or better in yard switching operation than a steam locomotive of considerably higher normal rating. The steam locomotive horsepower which is available only at higher speeds cannot be of full advantage on account of the relatively low speeds which are characteristic in yard switching. A 600-hp. Diesel, for instance, can perform equally well the yard work which a 1,400-hp. steam locomotive can perform.

"The comparative figures of $87.50 per Diesel horsepower and $35.00 per steam locomotive horsepower, may actually be not far apart when the high horsepower utilization of the Diesel in this type of service is taken into consideration. This is not true, of course, when the yard locomotives may be also required to do road transfer service.

"Among the advantages presented by the author of Diesel locomotives as compared with steam, feedwater treatment might be emphasized, particularly in some sections of the country. The quality of water in some locations is so poor that it presents a serious problem in steam-locomotive operation, even when subjected to expensive treatment.

"One of the disadvantages in the Diesel operation is the higher cost of lubrication, though he indicates that lubricating cost is a relatively small percentage of the total operating cost. It must be kept in mind that the lubrication cost, at least for certain types of Diesel engines, is on the order of 25 per cent of the fuel cost, and is thus an item not to be disregarded. The high fuel cost of Diesel engines is to some extent offset by the relative ease of handling liquid fuels as compared with coal. The expense of coal pockets, especially in outlying districts, may be relatively heavy.

"It is a question whether the life expectancy of Diesels is relatively much less than that of steam locomotives. The maintenance of a Diesel locomotive is to some extent analogous to that of the boy's jack-knife which may require both a new blade and a new handle in the course of its useful life, and would thus not seriously deteriorate if properly maintained. There would seem to be no limit except obsolescence to the life of the Diesel locomotive, and with increasing standardization of design this will be continually less important.

"Mr. Chapman mentions an expected figure of approximately 28 years life for a steam locomotive. It would be tragic indeed if the railroads of the country were to consider scrapping today all locomotives now in service which were acquired prior to 1914 and are still performing a very large percentage of the service."

F. E. Russell, mechanical engineer, Southern Pacific, agreed with Mr. Chapman's conclusions concerning fuel costs on Diesel locomotives and added that the experience on the road which he represents has been that lubrication cost on Diesel locomotives is much higher than on steam power and that, in general, Diesel lubrication cost approximates 30 per cent of the fuel costs as compared to less than 10 per cent for steam. Mr. Russell stated that he expected Diesel repair costs per mile to increase in inverse ratio to average speed. Explaining this, he added that he would expect the repair costs per mile on a Diesel freight locomotive averaging 30 m. p. h. to be approximately twice that of a Diesel passenger locomotive averaging 60 m. p. h. Mr. Russell also expressed the opinion that refinements in steam locomotive design and material have substantially reduced repair costs. Continuing he said: "A check of repair costs in passenger service on the Southern Pacific shows this cost per mile run to be actually less in the year 1940 than in the year 1920, notwithstanding the heavier equipment, faster schedules and the additional load placed on locomotive due to air conditioning equipment. Also, in freight service the cost of repairs per mile per 1,000-lb. of tractive force for 1920 was 1.22 cents, while in 1930 it was .68 cents, and in 1940, .63 cents. The above shows a reduction of about 50 per cent in cost of repairs per mile per 1,000 lb. tractive force during the past 20 years, notwithstanding increases in wages, size and capacity of locomotives and the addition of modern devices such as feedwater heaters, superheaters, boosters, improved air brakes, etc. If the above comparisons were made on a basis of potential horsepower output rather than tractive force, the unit saving per repair costs would be even more striking."

In discussing oil-lubricated journals, Mr. Russell stated that on the Southern Pacific these have contributed to a decided reduction in lubrication and repair costs. Continuing, he said:

"Locomotives in mountain territories, where curves are severe and numerous and grades heavy, show a reduction in lateral wear on drivers that has been particularly marked. Locomotives now make over 100,000 miles without the necessity of taking up lateral; with grease lubrication this attention was necessary at about 30,000 miles. In passenger service a check on lubrication costs developed that on 4-8-2 type locomotives, with grease-lubricated driving boxes, the cost per 1,000 miles averaged $5.31, while with oil-lubricated driving boxes the average cost was only $2.78, or a saving of 48 per cent in favor of oil lubrication."

In discussing operating mileage, Mr. Russell said that "When considering the author's figures of 250,000 miles per annum for Diesel passenger locomotives and 180,000 miles for steam passenger locomotives, I believe both these figures are somewhat higher than could ordinarily be obtained in regular service, unprotected. With 250,000 miles per annum at $87.50 per horsepower, we have 2,857 horsepower miles per dollar invested for Diesel power. With a steam locomotive at 180,000 miles per

annum and at $35.00 per horsepower, we have 5,143 horsepower miles per dollar. Therefore, for each Diesel horsepower mile we can obtain 1.8 horsepower miles in steam. If I were a superintendent of motive power, I would prefer to have approximately twice the power available to move business rather than to depend on half the number of locomotives."

Referring to track structures, Mr. Russell pointed out that "with 80-in. drivers a static wheel load of 37,500 lb. plus a dynamic augment due to 400 lb. of over-balance will probably produce shear stress in the shatter-crack zone of the rail that will be just within the limit at 100 m. p. h., and with a 150-lb. over-balance there is a margin of safety of about 38 per cent with the same static wheel load. On our 4-8-4 locomotives recently placed in service, with a static wheel load of 34,500 lb., we have an over-balance of 175 lb. According to the author's tables these locomotives have a margin of safety at 100 m. p. h. of about 48 per cent and the dynamic augment at diameter speed, or 80 m. p. h., is only 26 per cent of the static wheel load as compared to 50 per cent which was considered good practice 10 or 15 years ago."

T. V. Buckwalter, vice-president in charge of engineering, Timken Roller Bearing Company, commented on track stress as follows:

"On the subject of track stresses, it is not in order to compare the Diesel with its absence of reciprocating parts with the older steam locomotive, particularly as the latter has undergone a complete revolution in the last few years. There is considerable doubt as to whether the Diesel has any advantages in regard to track stresses as compared with the modern steam locomotive, such as the New York Central L-3-A. Certainly the steam locomotive as at present balanced and exemplified in the New York Central, Burlington and Rock Island experience is not limited as to top speeds by the matter of reciprocating parts and consequent balancing problems set upon that account. The balancing of the steam locomotive with light-weight reciprocating parts affords an opportunity to improve nosing, whereas the Diesel, with an absence of reciprocating parts, is subjected to nosing conditions that may be more severe than that of the modern steam locomotive, particularly as the Diesel has a relatively short wheel base, relatively small diameter driving wheels and a symmetrical wheel arrangement, all of which contribute to vibration periods which can be reflected in nosing and other irregular operation on the rail.

"The curves in Figs. 3 and 4 in connection with rail load and rail stress incident to static wheel load and balance will be a welcome addition to the gradually accumulating data on rail stresses. A perusal of these curves indicates the outstanding advantages following the reduction in the weight by one-half of the reciprocating parts."

A. I. Lipetz, chief consulting engineer, American Locomotive Company, in commenting on the Diesel locomotive said, in part, that the outstanding advantage of the Diesel-electric locomotive is the fact that the wheels do not exert centrifugal forces due to counterbalances, as in a steam locomotive. In referring to the speed-effect formula developed by Mr. Magee, he said:

"The speed effect according to the formula is a function of the speed of the locomotive in the first power, and effects the stress in the rail. If the weights per wheel and the diameter of the wheels are such that their ratios are the same, the effect of the two types of locomotives on the rail (steam and Diesel), according to the formula, are also the same. This is borne out by the formula and by Fig. 2.

"The present-day steam locomotive has a static limit of weight about 80,000 lb. per axle, or about 40,000 lb. per wheel. The diameter of the driving wheels in a steam locomotive is usually about 80 in. The dynamic augment in a well balanced modern locomotive is seldom over 8,000 lb. for the diameter speed—about 80 miles per hour. In other words, the total of the two forces—weight per wheel and dynamic augment—does not exceed 48,000 lb. per wheel, which makes the speed effect, according to the formula (48,000 instead of 40,000 for W) only slightly greater than the case would be in a wheel without the dynamic augment. As a whole, the wheel effect with proper balancing of reciprocating parts is 20 per cent greater than that given by the author in Fig. 2 for a wheel without dynamic augment.

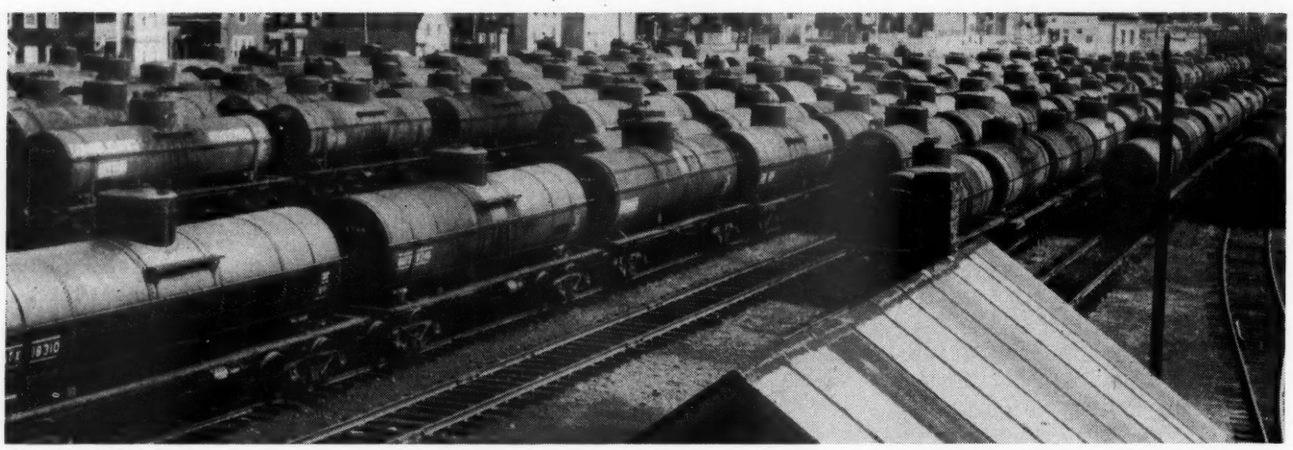
"Fig. 3 takes into consideration the effect of overbalances of various magnitudes. This figure has been tried out for a concrete example in the design of a 4-8-2 locomotive with 25½-in. by 30-in. cylinders; 69-in. wheels; not over 166 lb. overbalance for all coupled wheels and complete dynamic balancing (cross-balancing)." [At this point in his discussion, Mr. Lipetz referred to a chart, prepared by him, as part of this discussion, on which the straight lines, in Fig. 3, corresponding to 150 and 200 lb. overbalance were plotted and a third line, representing 166 lb. overbalance was added. From this modified chart the effect at 80 m. p. h. indicates a maximum permissible total load of 57,600 lb. whereas, as Mr. Lipetz pointed out, the permissible static weight plus dynamic augment for the locomotive as designed is only 44,500 lb. at 80 m. p. h.—EDITOR.]

"Special tests with a previously rebuilt locomotive with 69-in. wheels, which was properly cross counterbalanced, have shown that a speed of 80 m. p. h. did not impose any undue stress in rails. Measurements showed the stresses in rails between 17,100 and 23,300 lb. per sq. in.* and this latter high stress only in one instance. Thus, Mr. Chapman's curves can be very useful for checking."

* * *

A Baker Electric Lift Truck Unloading Railway Material

* See Modern Steam Passenger Locomotives—Research and Design, by P. W. Kiefer, a paper which also was presented at the semi-annual meeting of the A. S. M. E. An abstract of this paper will appear in a later issue.



International News Photo

Some of the 19,000 Tank Cars Laying Idle Throughout the Country—These on a Siding in Chelsea, Mass.

A Hundred More Tankers Won't Stump the Railroads

Anticipated oil shortage in East does not take into consideration flexibility of rail plant

NO shortage of oil or oil products in the eastern states need result from the transfer of tankers from Gulf-Atlantic to British service, for the railways are already equipped to take over all of the traffic that is being handled by these tankers. This includes the 100 American tankers which it was announced on July 20 would be transferred to British use, in addition to the 50 already transferred to the British. This ability of the railways to take over the traffic of these tankers has been overshadowed by the cry for new pipe lines and by the furor over the anticipated curtailment of the use of refined petroleum products which, it is forecast, will be necessary in the East because of transportation deficiencies.

Tanker Transfers

In April, President Roosevelt asked that 50 American tankers be transferred to British use, and on July 21 owners were asked to release 100 more. The first 50 have already been transferred. The second request asks for 25 now and 75 later. The transferred tankers will carry oil from South American and Gulf ports to ports on the Northeast coast or in Iceland where it will be transferred to British tankers and thus shorten the haul in British ships.

East Depends Upon Transported Oil

Because there is no crude oil production in the east coast states, and because the oil that is available from neighboring districts is limited, this territory draws its crude oil and refined products mainly from Texas and other oil-producing areas of the Southwest. The crude oil shipped into the East is refined at numerous refineries in this territory, and the products of these refineries, as well as the refined petroleum products shipped into the territory, are either consumed in this territory or are exported.

Of the total volume of crude oil and refined petroleum products transported into the Atlantic states, about 95 per cent moves by tankers, about 3 per cent by rail and trucks and 2 per cent by pipelines. In 1940, about 260 tankers were in service between the Gulf and Atlantic states.

A report made by a fact-finding committee of the American Petroleum Institute in June, 1941, at the request of the Office of Production Management, shows that the crude oil and refined petroleum products that moved into the eastern territory by tankers totaled 500,610,000 bbls. of 42 gal. each in 1940. The origin of this traffic was as follows:

	1940
Tankers from Gulf, bbls.	421,713,000
Tankers from California, bbls.	6,749,000
Tankers from Foreign (Imports), bbls.	72,148,000
Total, bbls.	500,610,000

This committee also reported that the use of gasoline, light fuel, kerosene, heavy fuel and lubricating oils totaled 505,922,000 bbls. in 1940 and that this use will increase to 555,142,000 bbls. in 1941 and to 588,918,000 bbls. in 1942.

The report also indicates that if the tankers are to continue to handle their proportion of the traffic, Gulf-Atlantic service will have to handle 443,112,000 bbls. in 1941 and 466,278,000 bbls. in 1942. The 466,278,000 bbls. is the equivalent of 1,958,367 tank car loads for the year, or 5,365 tank car loads per day. A pool of 53,650 tank cars operating on a 10-day turn-around basis would

be required to handle all of the anticipated requirements of 1942.

However, the accompanying table, Estimated Tanker Situation for Supplying U. S. Requirements, prepared by the A. P. I.'s fact-finding committee, shows that the fourth quarter of 1941 will be the only critical period and that the maximum U. S. shortage, caused by the recent transfer of 50 ships and previous transfers will be only 636,000 d. w. t. of tanker carrying capacity, including a 452,000 d. w. t. coastwise shortage and a 184,000 d. w. t. import shortage. This 636,000 d. w. t. shortage is the equivalent of 63.6 ships of 10,000 d. w. t., or 991,700,000 gal., or 99,170 tank car loads. This traffic, 1,078 car loads per day, can easily be handled with a pool of 10,780 tank cars on a 10-day turn-around basis.

If 100 more tankers are transferred before the fourth quarter of 1941, this 636,000 d. w. t. shortage will be increased about 1,070,000 d. w. t. or to 1,707,000 d. w. t. This is the equivalent of 2,686,950,000 gal., or 268,695 tank car loads for the quarter or 2,920 car loads per day.

Although this is a large volume of traffic, transportation officers point out that the railroads can handle 2,920 cars per day from Texas to eastern points with a pool of 29,200 tank cars operating on a 10-day turn-around basis. This contention is based upon the fact that better utilization of the 150,000 tank cars now in existence can produce a pool of 30,000 cars. The existing tank cars include 125,000 owned by leasing companies and petroleum companies, 12,000 owned by the chemical industry, 9,000 by the railroads and 4,000 by the molasses, alcohol and vegetable oil industries. Of these 125,000 cars, about 20,000 are now idle. A total of 10,000 more cars, it is estimated, can be made available by speeding up the loading and unloading and the routing of those now being used. Priorities on oil shipments would further simplify transportation.

While A. P. I.'s fact-finding committee estimates the shortage as 636,000 d. w. t., it also points out that the shortage can be reduced 264,000 d. w. t. or to 372,000 d. w. t. (585,900,000 gal.) by (1) easing the load line limitations on tankers, (2) substitution of Gulf Coast supplies for U. S. intercoastal movement, (3) rearrangement of South and Central American supplies, (4) relief from southeastern gasoline pipeline competition and (5) more effective use of barges. It also mentions the possibility of the application, either directly or indirectly, of seized and interned tankers in Western Hemisphere ports to Trans-Atlantic service.

Pipelines Not Needed

Even though railroad facilities are adequate to supplant tanker service, new pipelines, which will cost about $200,000,000, are being advocated. Of these lines, which will have a daily capacity of 15,246,000 gal. per day, only one, the capacity of which will be 924,000 gal. per day, can be in service in time for the critical period of the fourth quarter of 1941.

One line being sponsored is that of the Standard Oil Company of New Jersey from Portland, Me., to Montreal, Que. This line is designed to handle 55,000 bbl. of

Estimated Tanker Situation for Supplying U. S. Requirements

1941-1942

Prepared by a fact-finding committee of the American Petroleum Institute for the Office of Production Management
(All figures in dead weight tons—DWT)

(10,000 DWT of Tanker Capacity Has an Annual Carrying Capacity from U. S. Gulf to Atlantic Seaboard of Nearly 1,500,000 bbls.)

U. S. TANKER TONNAGE BALANCE FOR ATLANTIC SEABOARD REQUIREMENTS

	1941				1942	
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	Last 3 Quarters
I. Balance of Coastwise Requirements (U. S. Gulf to East Coast):						
Total U. S. Flag tanker tonnage, including new construction when effective†	4,527,000	4,616,000	4,648,000	4,714,000	4,852,000	5,279,000
Less:						
Government Tankers	321,000	364,000	412,000	412,000	412,000	592,000
Vessels ineligible for U. S. Coastwise service	87,000	87,000	87,000	87,000	87,000	87,000
Great Lakes, harbors, inland waters	128,000	128,000	131,000	131,000	131,000	131,000
Molasses and vegetable oil use	56,000	60,000	60,000	60,000	60,000	60,000
Tie-up, primarily for major repairs	61,000	75,000	100,000	55,000	38,000	68,000
Requirements for West Coast services (including U. S. shipments to Hawaii, Alaska, Canal Zone, but not Philippines)	446,000	450,000	450,000	450,000	460,000	460,000
Requirements for intercoastal	81,000	91,000	90,000	92,000	95,000	91,000
Requirements for Gulf Coast (includes U. S. shipments to Puerto Rico and Canal Zone)	82,000	80,000	80,000	80,000	85,000	85,000
	3,265,000	3,281,000	3,238,000	3,347,000	3,484,000	3,705,000
Less requirements for British shuttle service, based on 50 tankers (plus previous charter commitments for shuttle)	50,000	180,000	518,000	535,000	535,000	535,000
Leaves maximum available for Gulf/East Coast service	3,215,000	3,101,000	2,720,000	2,812,000	2,949,000	3,170,000
Estimated tonnage required for Gulf/East Coast movements	3,011,000	2,888,000	2,859,000	3,264,000	3,275,000	3,070,000
Indicated surplus/(shortage) U. S. flag capacity for Gulf to East Coast (restricted coastwise service)*	204,000	213,000	(139,000)	(452,000)	(326,000)	100,000
II. Balance on U. S. Import Requirements (East Coast and Gulf):						
Estimated tonnage availability:						
U. S. vessels ineligible for U. S. coastwise movements included under special services above	87,000	87,000	87,000	87,000	87,000	87,000
Estimated net availability foreign flag vessels for U. S. import (based on 1st quarter 1941 experience)	444,000	444,000	444,000	444,000	444,000	444,000
Maximum available for U. S. import service	531,000	531,000	531,000	531,000	531,000	531,000
Estimated tonnage required for U. S. imports	735,000	690,000	692,000	715,000	752,000	736,000
Indicated surplus/(shortage) for imports before consideration of coastwise surplus/(shortage)	(204,000)	(159,000)	(161,000)	(184,000)	(221,000)	(205,000)
III. Balance on Total Atlantic Seaboard Consumption Requirements:						
U. S. Coastwise surplus/(shortage) from above	204,000	213,000	(139,000)	(452,000)	(326,000)	100,000
U. S. imports surplus/(shortage) from above	(204,000)	(159,000)	(161,000)	(184,000)	(221,000)	(205,000)
TOTAL U. S. Surplus/(shortage) versus Consumption Requirements		54,000	(300,000)	(636,000)	(547,000)	(105,000)

* This figure is low to the extent that U. S. tonnage is utilized in services other than the supplying of U. S. coastwise requirements; but such non-coastwise utilization of U. S. flag tankers releases corresponding tonnage of foreign flag, which may be directly or indirectly made available against U. S. import requirements.

† All U. S. registered tankers of 400 gross tons and over.

crude oil a day but for the present will move only 35,000 bbl. This $8,000,000 project will not be completed until January 1, 1942.

Another proposal contemplates the construction of a 24-in. crude oil pipeline from Texas to the refineries in the New York and Philadelphia areas. This line, which cannot be completed before August, 1942, will cost $70,000,000 and will have a capacity of 250,000 bbl. per day. In addition, there is being considered a 20-in. product pipeline to parallel this crude pipeline. This will cost $70,000,000 and will have a capacity of 225,000 bbls. per day.

Another proposal by the Standard and Shell companies contemplates the construction of the Plantation Pipe Line from Baton Rouge, La., and New Orleans to points in Georgia, South Carolina and North Carolina. This line will have a capacity of 60,000 bbls. of products. If a right-of-way can be secured, the line may be completed by July, 1942. An expansion of this line to 90,000 bbls. is also being considered, but this expansion can not be completed before January, 1944.

Still another project is the Southeastern Pipe Line from St. Joe, Fla., to points in Georgia and to Chattanooga, Tenn. This line is sponsored by the Gulf Oil Company and the Pure Oil Company. It is designed to carry 18,000 bbls. of products a day and if a right-of-way can be secured at once will be completed by October 1, 1941.

Many Interests Oppose New Pipelines

Among the interests that are opposing the construction of these new oil pipelines are the railroads, railroad brotherhoods, the state of Georgia, gas pipe lines and coal companies and their employees. Opposition developed early last year when 24 railroads refused to give the Southeastern Pipe Line Company permission to make 81 crossings of their rights-of-way. Later the Georgia legislature adjourned without acting upon the President's request that the state laws be changed to allow pipelines the right of eminent domain.

Following this early opposition, the President, on February 6, 1941, advised the House Interstate Commerce Committee that the completion of one pipe line and the commencement of another were being delayed by rival services, and on May 20 he told Congress that "there is a distinct possibility" that it will be necessary to restrict oil consumption on the Atlantic seaboard to essential uses "within a few months" unless legislation is adopted to facilitate the construction of new pipe lines. On the same day, Rep. William P. Cole, Jr., of Maryland, chairman of the petroleum subcommittee of the House Interstate Commerce Committee, introduced bill H. R. 4816 which provides that the President shall prescribe federal aid for the construction of pipelines by whatever agency of government or private individuals he shall designate; that pipelines have the right of eminent domain; that the President may provide for federal advances to persons designated to construct or complete pipelines on whatever security, interest and amortization basis the President may dictate; and that the United States may arrange for the lease, sale or operation of such pipelines to which it gains title as a result of default. The bill was passed by the House on June 5 and by the Senate on July 13.

Suggestions for Making Up Tanker Deficiencies

The most practical and economical substitute for the carrying capacity of tankers that have temporarily been transferred to other service is railroad tank cars. This suggestion is opposed by the oil companies because the new pipelines will afford them low cost transportation after the emergency has passed.

The report of A. P. I.'s fact-finding committee recognizes the importance of tank cars and in discussing their use during the peak of consumption, pointed out that the efficiency of existing tank cars can be improved by:

1. Eliminating the lost time at loading points due to the present schedule of a five-day shipping week;

2. Eliminating the lost time at points of destination by the prompt placing and unloading of cars upon arrival;

3. Expediting, through railroad co-operation, the transportation, the movement of cars, both loaded and empty.

The report also recommended that in order to produce the tank cars required, all those using and handling tank cars observe the following:

(a) Load and ship cars on Saturdays and Sundays as well as the other five days of the week;

(b) Railroads co-ordinate this effort with train schedules, getting the cars promptly on their way to destinations;

(c) Distributors and consumers of petroleum products be required to set up facilities for the prompt unloading of cars upon arrival, including Saturdays, Sundays and holidays;

(d) Transportation of petroleum products be neither deferred nor advanced in anticipation of freight rate changes, tax adjustments, price changes, or stock shortage, in order to avoid bulges and provide an orderly and continuous movement of petroleum;

(e) The chief operating officers of the railroads be requested to issue instructions that empty tank cars be promptly removed from the consignee's siding and the movement of both empty and loaded tank cars expedited as much as possible;

(f) All bad order cars that can be put into safe operating condition be repaired immediately and cars with arch bars be permitted to operate in limited service during the emergency;

(g) All shippers use only the most direct and quickest route from point of origin to point of destination.

"If all these things are uniformly done," the report continues, "it is believed that this increased efficiency would produce sufficient tank cars to move between six and eight million barrels of petroleum a month from Texas to the Atlantic Seaboard. The limitations on the use of tank cars in this service are the availability of railroad motive power and the increased cost of railroad transportation versus tanker transportation.

"Should the limiting factors prevent such a movement of crude or products by rail, the available equipment thus produced might be used effectively for rail transportation in shorter hauls from pipeline or water terminals or other rail movements created by reason of the tanker deficiency.

"Consideration should also be given to the efficient use of tank cars transporting other liquid commodities such as alcohol, benzol, toluol, turpentine, molasses, vegetable oils, etc., as well as cars owned and leased by the railroads to handle petroleum products consumed by the railroads. These cars are not included in the 125,000 tank cars considered as available to the petroleum industry.

"The creation of these cars being dependent entirely upon increased efficient use of the existing supply, consideration should be given to the question of administration, to the end that the efficiency contemplated will not be lost through the lack of co-operation."

In addition, the report suggested changes in practices

(*Continued on page 160*)

Vaughan Elected C.N.R. President

S. J. Hungerford—president since 1932—will continue as Chairman of Board

Robert C. Vaughan

Samuel J. Hungerford

SAMUEL J. HUNGERFORD, president of the Canadian National since 1932 and chairman of the board since 1936, has resigned the presidency of the system, including all subsidiary and affiliated companies. Robert Charles Vaughan, vice-president in charge of purchases, stores and steamships since 1920, has been elected president and chief executive officer, effective July 24. Mr. Hungerford will remain as chairman of the board.

The 55 years which Mr. Hungerford has devoted to railroad service were co-existent with the period of greatest development of Canadian transportation, a period which he himself has described on occasion as "a thrilling half century." In contrast to the United States, which had practically completed its present-day railroad network by 1900, the Dominion of Canada has seen its greatest railroad development since that date. When Mr. Hungerford began his apprenticeship in a Canadian Pacific shop at Farnham, Que., in 1886, the Grand Trunk and the Intercolonial served the field in eastern Canada and the Canadian Pacific had just completed its transcontinental line between Montreal, Que., and Vancouver, B. C. The total railroad mileage was 11,000 or approximately one-quarter the present mileage of 42,700. In 1886 gross revenues of all the Canadian roads amounted to $33,000,000. In 1940 they totaled $424,820,629 and this year are approaching the peak gross of 1928, which amounted to $563,732,260. As a railroad man Mr. Hungerford has watched the population of the Dominion more than double itself, the volume of Canada's production and resources multiply many times.

Starting in his railroad career as a machinist apprentice at five cents an hour for a ten-hour day, the retired C. N. R. president came up through the ranks of the mechanical department and was intimately associated with the intensive development of locomotives and rolling stock from the last days of wood-burners and hand-braked cars to present day equipment. As an executive of the Canadian Government Railways, Mr. Hungerford faced the trying problem of molding a mixture of private and publicly-owned railroads in the crucible of amalgamation into a unified system under public ownership along the lines of a private corporation.

Except for the Grand Trunk Pacific and the National Transcontinental, the roads involved in the formation of the Canadian National had been built without relation to each other. The job of co-ordinating operations, shops and personnel and at the same time triumphing over political bungling and interference, was a superhuman one. Finally, Mr. Hungerford succeeded the late Sir Henry Thornton as president of the system in the depth of a great depression when the important traffic of export wheat had dwindled to practically nothing and highway competition was becoming acute.

Through all of this Mr. Hungerford revealed a predilection for the "middle of the road." When once assured of the absolute correctness of a policy embarked

upon, the C. N. R. chief maintained silence, believing that in the end the public—his boss—would render full justice. Since complete study and full consideration preceded the adoption of any program, he felt himself justified in pursuing a program to its completion.

Throughout his life he has been thorough. Every job was mastered and his stepping stones were solid. That thoroughness has given him an encyclopaedic knowledge of transportation. He has been over every mile of the vast C. N. R. main and branch line network and is so well acquainted with every bridge and trestle that mention of any one is to flash before his mind's eye a photographic reproduction of that particular span.

As president of the C. N. R. Mr. Vaughan will head one of the world's most extensive transportation systems having the largest railroad mileage of any single road in North America and operating extensive auxiliary services of telegraphs, express, drayage, hotels, inland and coastal steamships and related services of ocean facilities and air lines. As vice-president in charge of purchases and stores for the system he was responsible for the administration of the department which is reputed to be Canada's biggest buyer. Its purchases average nearly $100,000,000 annually and are supplied by 8,000 Canadian firms. One ton of coal out of every five produced in the Dominion is purchased by the C. N. R. His jurisdiction has included also the operation of ocean and lake steamers and the administration of the railroad-owned Rail and River coal mines in Ohio.

In a railroad career extending over 42 years, Mr. Vaughan has gained practical experience remarkable for its versatility. He has had intimate acquaintance with operation, finance, traffic promotion, auxiliary services, executive administration and acquaintance with every section of Canada and its conditions and requirements. For six months following the launching of Canada's defense program in July, 1939, Mr. Vaughan performed double duty as chairman of a Defense Purchasing Board. As a "dollar-a-year" man for this limited time, Mr. Vaughan organized the bureau at Ottawa, where he remained until the more permanent Ministry of Supply was set up and operation of the machinery permitted his return to Montreal.

Samuel J. Hungerford was born near Bedford, Que., on July 16, 1872. When he was 14 his father died and he sought employment as a machinist apprentice in the shop of the South Eastern (now part of the C. P. R.) at Farnham, Que., in 1886, thereby commencing an uninterrupted career of 55 years in railroad service. In 1891 he became journeyman machinist for the C. P. R. and worked at many points in Quebec, Ontario and Vermont. In 1894 he became chargeman at the Windsor street station, Montreal. In 1897 he underwent a series of promotions through the Mechanical department which took him to jobs in many sections of the Dominion as follows: Assistant foreman, Farnham, Que., 1897 to 1900; locomotive foreman, Megantic, Que., 1900 to 1901; general foreman, McAdam Junction, N. B., 1901; locomotive foreman, Cranbrook, B. C., 1901 to 1903; master mechanic, Western division, Calgary, Alta., 1903 to 1904.

In 1904 Mr. Hungerford was appointed superintendent locomotive shops at Winnipeg, Man., and in 1908 became superintendent of the entire shop property at Winnipeg. In 1910 he started service with a constituent road of the present C. N. R., as superintendent of rolling stock of the Canadian Northern at Winnipeg. In 1915 he was transferred to the same position at Toronto, Ont. In 1917 he was promoted to general manager, Eastern lines, and upon grouping of the Canadian Northern, National Transcontinental and Canadian Government railways into the Canadian National in 1918 he was appointed assistant vice-president (operating, maintenance and construction) of the new system. Two years later, in 1920, the Grand Trunk Pacific was brought into the amalgamation and Mr. Hungerford became vice-president in charge of these departments. In 1922 he became general manager of the system and in 1923 when the Canadian National had been made complete by the inclusion of the Grand Trunk he was appointed vice-president in charge of operation and construction. In 1932 Sir Henry Thornton resigned and Mr. Hungerford was appointed acting president. In 1934 this appointment was made permanent and in 1936 he assumed the additional duties of chairman of the board of directors.

Robert Charles Vaughan was born in Toronto, Ont., on December 1, 1883, and was educated in the public schools, Harbord Collegiate Institute and the Central Business College. Shortly before his 15th birthday he began an uninterrupted railroad career of 42 years as messenger boy on the Canadian Pacific in 1898 and shortly won appointment as clerk and stenographer. In 1902 he joined the Grand Trunk and a year later transferred to the Canadian Northern. In 1904 came the first opportunity to widen his knowledge of general railroading when he was appointed secretary to vice-president and general manager of the Canadian Northern. This job took him all over the system. Absorption thereby of details of railroad operation brought him, in 1910, appointment as assistant to the vice-president and general manager. This position included full charge of operation of the so-called Royal Line steamers running from Montreal to Great Britain. In 1918 Mr. Vaughan was appointed assistant to the president of the Canadian National and assistant to the president of the Canadian Government Merchant Marine, Toronto. Two years later, in 1920, he was appointed vice-president in charge of purchases and stores, with the additional jurisdiction of steamships, which post he has held up to his election as president.

A Hundred More Tankers Won't Stump the Railroads

(*Continued from page 158*)

that would bring about a more efficient use of tankers, pipelines, tank trucks and barges.

Action has already been taken to offset the tanker transfer. A voluntary organization of tank car owners was set up at Chicago on July 7 and is engaged in a study that will bring about the maximum use of tank cars. Tank car movements have been speeded up by faster loading and unloading. Joint pipeline-rail rates have been established and certain pipelines have increased their capacities so that more oil can be turned over to the railroads at central and eastern points for transportation to the Atlantic Coast.

Also, the keel of the first 72 tankers which the Maritime Commission is building at the Sun Shipbuilding and Drydock Company plant at Chester, Pa., was laid early in July. This tanker is scheduled to be delivered on February 28, 1942, at least 25 more tankers will be delivered in 1942 and 46 in 1943. Each is of 19,750 gross tons and has a capacity of 138,000 bbls. In addition to these, the commission has under construction eleven other tankers on previous contracts, two of which will be delivered in August and October, 1941 and 9 in 1942.

Story of Tie Renewals in 1940

Data reported to A. R. E. A. by Committee on Ties, taken from annual reports of the railways, give figures for replacements last year

SIXTY-ONE railways in the United States and Canada inserted in renewals more ties per mile of maintained track in 1940 than in 1939, while 68 others renewed less ties, 4 applied the same number and 1 road used only second-hand ties for its replacements, according to a report made to the American Railway Engineering Association by the Committee on Ties. Of these 134 roads, 131 are in the United States and 3 in Canada. Those in the United States inserted a total of 43,616,634 ties in replacements in 1940, compared with 45,086,393 in 1939 a decrease of 1,469,759 ties, or 9.7 per cent. The three Canadian roads inserted 8,973,053 ties in 1940; the complete figures for 1939 are not available for comparing the Canadian roads. These and other important comparisons can be drawn from the tabulation of statistics relating to tie renewals compiled by the Bureau of Railway Economics from reports made to the Interstate Commerce Commission by the roads, and reproduced here in condensed form.

In general, the number of ties renewed per mile of

Statistics of Crosstie Renewals on Leading Railroads in the United States and Canada for the Calendar Year Ending December 31, 1940

Road	Miles of maintained track occupied by wooden cross ties	Total number of wooden crossties renewed in 1940	Number of wooden cross-tie renewals per mile of maintained track		Per cent of wooden cross-tie renewals to all ties in tracks		New wooden ties untreated (U)		New wooden ties treated (T)		Weighted average cost per new wooden cross-tie	Cost of new wooden cross-tie renewals per mile of maintained track	Cost of new wooden cross-tie renewals per thousand equated gross ton-miles (cents)
			1940	5 year average	1940	5 year average	Per cent applied	Average cost‡	Per cent applied	Average cost‡			
New England Region:													
Bang. & Aroos.	829.81	145,059	175	186	6.1	6.6	100	$0.65	....	....	$0.65	$113	7.68
B. & M.	3,075.58	298,986	97	83	3.3	2.8	14.3	0.89	85.7	$1.66	1.55	150	3.42
C. N. R. (Lines in N. E.)	248.77	37,750	152	142	4.9	4.6	25.4	0.65	74.6	1.23	1.08	164	6.73
C. P. R. (Lines in Me.)	212.40	11,852	56	101	1.8	3.4	2.8	0.52	97.2	1.22	1.20	67	0.95
C. P. R. (Lines in Vt.)	127.78	7,938	62	52	2.1	1.7	7.8	0.60	92.2	1.12	1.08	67	1.49
C. Vt.	496.27	41,874	84	108	2.9	3.7	1.9	1.03	98.1	1.23	1.23	104	2.19
Me. Cent.	1,235.87	199,440	161	198	5.3	6.6	62.9	0.74	37.1	1.84	1.15	185	6.87
N. Y. Connecting	25.90	9,768	377	312	12.0	9.8	....	....	100	1.78	1.78	672	4.79
N. Y. N. H. & H.	3,942.81	207,319	53	74	1.7	2.4	....	....	100	1.02	1.02	54	1.03
Rutland	499.85	22,923	46	62	1.5	2.0	....	....	99*	1.25	1.25	57	1.85
Total	10,695.04	982,909	92	102	3.1	3.4	32.1	0.72	66.9	1.41	1.18	108	2.54
Great Lakes Region:													
Ann Arbor	403.74	36,244	90	96	3.0	3.2	....	....	100	1.47	1.47	132	3.46
Cambria & Ind.	58.45	20,444	350	325	12.9	12.2	5.4	0.96	94.6	1.91	1.86	651	23.89
D. & H.	1,435.27	165,927	116	102	3.8	3.3	0.5	1.22	99.5	1.87	1.86	215	3.25
D. L. & W.	2,314.78	125,863	54	69	1.9	2.4	....	....	86.8*	1.64	1.64	89	1.27
Det. & Mack.	293.45	33,832	115	126	3.8	4.2	60	0.48	40	0.78	0.60	69	8.68
D. & T. Shore Line	151.61	18,060	119	114	4.0	3.8	....	....	100	1.79	1.79	213	4.21
Erie (Incl. C. & E.)	4,809.75	400,429	83	86	2.8	2.9	0.1	0.48	99.9	1.41	1.41	118	1.64
G. T. W.	1,940.29	302,150	156	156	4.9	4.9	....	....	100	1.56	1.56	243	5.54
L. & H. R.	115.40	8,515	74	85	2.7	3.2	....	....	100	2.21	2.21	163	2.95
L. & N. E.	266.94	16,526	62	62	2.1	2.1	....	....	100	1.70	1.70	105	3.10
L. V.	2,684.37	154,234	57	43	1.9	1.5	....	....	100	1.73	1.73	100	1.72
Monongahela	241.63	43,422	180	167	6.2	5.7	....	....	100	1.64	1.64	294	6.97
Montour	71.41	6,876	96	97	3.3	3.4	1.2	1.10	84.4*	2.14	2.13	205	4.32
N. Y. C.	21,573.76	2,127,747	99	91	3.1	2.9	....†	0.79	99.1*	1.50	1.50	148	2.05
N. Y. C. & St. L.	2,521.86	297,352	118	107	3.7	3.4	....	....	100	1.45	1.45	172	2.30
N. Y. O. & W.	867.63	.....	..	30	..	1.0	....	....	....*	....	....	....	....
N. Y. S. & W.	227.94	15,700	69	78	2.4	2.7	....	....	100	0.61	0.61	42	2.35
P. M.	2,801.29	488,705	174	162	5.8	5.4	....	....	100	1.61	1.61	281	7.00
P. & L. E.	917.62	85,117	93	63	3.1	2.1	0.1	0.97	99.9	1.85	1.85	172	3.33
P. & S.	123.32	31,483	255	266	9.1	9.5	48.3	1.01	50.8*	1.86	1.44	369	17.75
P. & W. Va.	186.28	57,795	310	274	10.2	9.3	1.2	0.96	97.9*	2.04	2.02	628	11.62
P. S. & N.	220.44	35,661	162	159	5.5	5.4	95.6	0.99	4.4	1.26	1.00	162	10.94
Wabash	3,175.25	463,915	146	152	4.7	4.9	....	....	100	1.54	1.54	225	3.53
Total	47,402.48	4,935,997	104	99	3.4	3.3	1.5	0.85	97*	1.55	1.54	160	2.48
Central Eastern Region:													
A. C. & Y.	212.85	49,734	234	170	7.8	5.8	3.6	1.19	93.6*	1.39	1.38	323	12.85
B. & O.	10,573.43	1,192,841	113	113	4.0	4.0	0.3	0.79	99.7	1.46	1.46	165	2.49
B. & L. E.	489.60	72,344	148	216	4.8	7.0	....	....	100	2.18	2.18	322	3.40
C. of N. J.	1,481.71	132,827	90	64	3.2	2.3	....	....	100	1.72	1.72	154	2.62
C. of E. I.	1,462.42	156,764	107	100	3.7	3.3	....	....	100	1.19	1.19	128	2.98
C. & I. M.	165.07	9,646	58	78	1.9	2.5	....	....	100	1.65	1.65	97	1.36
C. I. & L.	793.00	77,362	98	121	3.2	3.9	1.7	0.72	97.3*	1.16	1.15	112	2.56
D. T. & I.	610.14	49,821	82	111	2.8	3.8	2.5	0.55	97.5	1.39	1.37	112	3.69
E. J. & E.	871.20	158,672	182	183	5.9	5.9	....	....	97.8*	1.56	1.56	284	7.71
Ill. Term.	633.40	64,315	102	91	3.4	3.0	3.8	0.86	93.2*	1.27	1.25	127	8.10
Long Island	803.80	48,797	61	66	2.1	2.2	....	....	100	1.68	1.68	102	2.16
Missouri-Ill.	240.09	65,478	273	315	8.8	10.1	99.1	0.68	0.9	1.23	0.69	187	13.37
Penna.	21,281.42	1,787,220	84	81	3.0	2.9	....†	0.84	99.9*	1.62	1.62	136	1.65
P.-R. Seashore Lines	663.19	84,168	127	79	4.9	2.9	....	....	100	1.87	1.87	237	8.74
Reading	3,008.55	173,236	58	42	2.1	1.5	....	....	100	1.82	1.82	105	1.90
S. I. Rap. Tran.	80.71	7,746	96	58	3.5	2.1	....	....	100	0.59	0.59	56	3.26
W. M.	1,169.03	208,762	179	184	6.3	6.4	17.9	0.96	82.1	1.60	1.48	265	4.93
W. & L. E.	844.45	144,966	172	170	5.7	5.6	....	....	100	1.46	1.46	251	5.10
Total	45,384.06	4,484,699	99	96	3.5	3.4	2.5	0.79	97.3*	1.56	1.54	152	2.23
Pocahontas Region:													
C. & O.	5,092.87	385,370	76	80	2.5	2.6	....	....	99.9*	1.28	1.28	97	0.93
N. & W.	4,253.90	173,758	41	41	1.3	1.3	....	....	96*	1.33	1.33	55	0.56
R. F. & P.	371.44	132,481	357	296	12.5	10.4	....	....	99.9*	1.70	1.70	605	5.42

Statistics of Crosstie Renewals on Leading Railroads in the United States and Canada for the Calendar Year Ending December 31, 1940—Continued

Road	Miles of maintained track occupied by wooden cross ties	Total number of wooden crossties renewed in 1940	Number of of wooden cross-tie renewals per mile of maintained track		Per cent of wooden cross-tie renewals to all ties in tracks		New wooden ties untreated (U)		New wooden ties treated (T)		Weighted average cost per new wooden cross-tie	Cost of new wooden cross-tie renewals per mile of maintained track	Cost of new wooden cross-tie renewals per thousand equated gross ton-miles (cents)
			1940	5 year average	1940	5 year average	Per cent applied	Average cost‡	Per cent applied	Average cost‡			
Virginian	874.49	124,617	143	188	4.6	6.0	....	....	99.1*	$1.36	$1.36	$194	1.87
Total	10,592.70	816,226	77	81	2.5	2.6	....	....	98.9*	1.37	1.37	106	1.04
Southern Region:													
A. G. S.	547.75	47,428	87	150	2.8	4.8	2.9	$1.37	97.1	1.79	1.78	154	2.50
A. & W. P.	141.73	21,749	153	168	5.0	5.5	98.9	1.23	1.1	0.89	1.23	188	3.77
W. R. of Ala.	182.08	27,885	153	160	5.0	5.2	91	1.23	9	1.49	1.26	193	4.63
A. B. & C.	793.06	122,454	154	164	5.3	5.7	45.3	0.78	54.7	1.15	0.98	152	6.32
A. C. L.	6,824.76	817,211	120	125	4.1	4.3	74.2	0.82	25.8	1.20	0.92	110	3.01
C. of Ga.	2,330.30	363,364	156	144	5.3	5.0	0.9	0.87	99.1	1.02	1.01	158	4.73
C. & W. C.	427.65	58,778	137	150	4.8	5.2	100	1.09	....	....	1.09	149	7.11
C. N. O. & T. P.	772.43	49,958	65	96	2.1	3.1	0.1	0.50	99.9	1.78	1.78	115	1.12
Clinchfield	392.99	96,661	246	269	8.1	8.9	57.2	0.73	42.8	1.40	1.02	250	3.21
Col. & Green.	204.60	25,701	126	195	4.0	6.2	32.8	0.67	67.2	1.39	1.15	145	8.84
F. E. C.	1,343.67	267,371	199	168	6.9	5.9	91.1	0.99	8.9	1.69	1.05	209	5.11
Georgia	433.01	66,870	154	147	5.0	4.8	95.9	1.08	4.1	2.02	1.12	173	4.69
G. & F.	452.11	91,550	202	224	7.5	8.3	100	0.63	....	....	0.63	127	12.07
G. S. & F.	468.85	58,360	124	96	4.0	3.1	100	1.08	....	....	1.08	134	3.91
G. & S. I.	310.30	69,245	223	192	7.2	6.3	....	....	100	1.07	1.07	238	14.79
G. M. & O.	2,098.62	655,674	312	295	9.8	9.3	27.1	0.65	72.8*	1.07	0.96	300	8.93
I. C.	7,701.99	1,421,493	185	158	6.1	5.2	1.6	0.89	98.4	1.11	1.11	205	3.61
Y. & M. V.	2,098.81	406,911	194	171	6.3	5.6	31.8	0.76	68.2	1.11	0.99	193	6.86
L. & N.	6,874.15	843,128	123	116	4.3	4.0	2.5	1.07	97.5	1.44	1.43	176	2.94
Miss. Cent.	174.23	47,687	274	309	8.7	9.8	2.7	0.46	97.3	1.10	1.08	296	23.37
N. C. & St. L.	1,518.69	160,514	106	111	3.9	3.9	....	....	100	1.41	1.41	149	3.56
N. O. & N. E.	281.27	25,709	91	115	3.0	3.7	....	....	100	1.73	1.73	158	3.14
Nor. Sou.	847.80	288,179	340	320	12.3	11.1	100	0.62	....	....	0.62	212	12.43
S. A. L.	5,358.64	990,183	185	197	6.1	6.5	32.4	0.95	67.6	1.19	1.12	206	5.10
Southern	8,653.46	1,611,403	186	219	6.0	7.0	31.3	1.21	68.7	1.62	1.50	279	5.40
Tenn. Cent.	337.51	84,470	250	245	8.3	8.1	88.4	0.75	11.6	1.31	0.82	204	8.73
Total	51,570.46	8,719,936	169	171	5.6	5.7	32.5	0.90	67.5	1.29	1.16	196	4.30
Northwestern Region:													
C. & N. W.	11,887.65	1,479,791	124	139	4.2	4.7	4	0.56	96	1.07	1.05	131	4.08
C. G. W.	1,892.85	308,939	163	161	5.5	5.4	47	0.98	53	1.47	1.24	202	4.22
C. M. St. P. & P.	13,739.78	2,386,983	174	165	5.6	5.4	18.8	0.56	81.2	1.32	1.18	205	5.76
C. St. P. M. & O.	2,211.20	375,549	170	177	5.7	5.9	8.7	0.59	91.3	1.27	1.21	206	6.29
D. M. & I. R.	1,106.00	112,583	102	89	3.4	3.0	18.7	0.76	81.3	1.64	1.47	150	3.39
D. S. S. & A.	517.75	105,789	204	209	7.2	7.4	93.6	0.60	6.4	1.24	0.64	130	8.30
D. W. & P.	209.78	66,702	318	323	10.9	10.8	84.3	0.56	15.7	1.62	0.72	230	8.51
G. N.	9,881.45	1,413,307	143	123	4.6	4.0	1.7	0.49	94.9*	1.31	1.30	185	4.57
G. B. & W.	283.22	98,571	348	359	12.1	12.4	99.5	0.88	0.5	1.31	0.89	308	16.62
L. S. & I.	232.39	42,604	183	183	6.1	6.1	92.2	0.62	7.8	1.51	0.69	127	13.43
M. & St. L.	1,556.09	349,892	225	210	7.4	6.9	73	0.74	27	1.36	0.91	204	10.28
M. St. P. & S. S. M.	4,931.36	681,871	138	156	4.7	5.3	59.2	0.62	40.8	1.16	0.84	117	4.88
N. P.	8,985.43	1,193,373	133	130	4.6	4.5	1.5	0.57	98.5	1.18	1.18	156	4.55
Spokane Int.	179.25	58,813	328	344	11.6	12.2	99.9	0.46	0.1	1.68	0.46	150	10.81
S. P. & S.	1,092.54	288,811	264	205	9.1	6.8	13.3	0.51	86.7	1.26	1.16	306	8.71
Total	58,706.74	8,963,578	153	150	5.1	5.0	19.9	0.65	79.5*	1.25	1.13	172	5.04
Central Western Region:													
Alton	1,507.24	368,168	244	243	8.1	8.0	62.2	1.08	34.1*	1.76	1.32	323	6.91
A. T. & S. F.	19,325.62	1,755,435	91	104	3.0	3.4	....	....	100	1.25	1.25	113	2.51
C. B. & Q.	12,295.87	1,673,856	136	146	4.4	4.7	....	....	86.6*	1.28	1.28	175	4.54
C. R. I. & P.	9,790.36	1,064,945	109	115	3.6	3.8	....	....	100	0.96	0.96	104	2.65
C. & S.	887.55	89,260	101	95	3.3	3.2	4.7	0.46	82.4*	1.23	1.19	120	3.72
D. & R. G. W.	3,277.97	180,798	55	100	1.8	3.2	4.7	0.47	80.3*	1.09	1.05	58	1.51
D. & S. L.	315.37	41,218	131	242	4.3	7.9	....	....	100	1.29	1.29	169	6.50
Ft. W. & D. C.	950.06	83,564	88	85	3.1	2.8	....	....	95*	1.13	1.13	100	3.45
Nev. Nor.	191.02	36,497	191	159	6.7	5.6	100	0.87	....	....	0.87	167	19.93
Northwestern Pac.	458.75	79,282	173	129	5.9	4.4	99.4	0.75	0.6	1.31	0.75	130	6.44
S. P.	12,242.33	1,243,814	102	93	3.3	3.1	13.5	0.71	86.4*	1.19	1.13	115	1.75
T. P. & W.	276.64	60,150	217	295	6.9	9.3	....	....	100	1.37	1.37	298	10.72
U. P.	13,147.87	2,099,328	160	160	5.7	6.5	2.6	0.61	97.4	1.13	1.12	178	2.75
Utah	72.21	5,408	75	133	2.6	5.0	5.2	0.70	83.7*	2.21	2.12	159	5.01
W. P.	1,469.79	517,870	352	332	11.9	11.2	36.5	0.79	63.5	1.35	1.14	402	6.43
Total	76,208.69	9,299,593	122	129	4.1	4.3	8.1	0.84	88.4*	1.19	1.16	142	2.88
Southwestern Region:													
B.-R. I.	208.16	19,216	92	77	2.9	2.4	....	....	100	0.98	0.98	91	4.72
G. C. L.													
B. S. L. & W.	139.79	15,916	114	101	3.8	3.4	....	....	100	1.14	1.14	130	2.03
N. O. T. & M.	225.02	29,191	130	170	4.2	5.6	....†	0.60	100	1.14	1.14	148	4.37
St. L. B. & M.	749.45	98,198	131	112	4.3	3.7	....	....	100	1.08	1.08	142	4.41
S. A. U. & G.	359.80	41,825	116	128	4.0	4.4	....	....	100	1.08	1.08	125	9.32
I.-G. N.	1,474.44	177,694	121	110	4.0	3.7	....	....	100	1.02	1.02	123	3.43
K. C. S.	1,257.93	167,190	133	132	4.2	4.2	....	0.67	100	1.05	1.05	140	3.17
K. O. & G.	352.03	18,762	53	158	1.8	5.3	....	....	100	0.98	0.98	52	2.44
L. & A.	910.90	180,213	198	238	6.1	7.5	15	0.52	85	0.94	0.87	173	5.96
M. V.	380.77	26,586	70	96	2.4	3.2	0.4	0.19	99.6	1.03	1.03	72	7.34
Miss. & Ark.	358.32	110,401	308	368	9.9	11.8	100	0.48	....	....	0.48	147	12.25
M-K-T	4,067.52	307,884	76	105	2.4	3.3	10.2	0.70	89.8	0.99	0.96	73	2.21
M. P.	8,967.02	1,501,025	167	187	5.4	6.0	7.6	0.60	92.4	1.07	1.03	173	3.65
O. C.-A-A	141.36	17,214	122	210	4.2	7.1	57.5	0.46	42.5	0.25	0.37	45	10.31
St. L.-S. F.	6,399.58	766,558	120	169	3.8	5.4	4.6	0.63	95.4	1.05	1.03	123	3.78
St. L. S. F. & T.	153.15	27,828	182	186	5.8	5.8	5.7	0.63	94.3	1.04	1.02	185	6.61
St. L. Sw.	1,865.27	309,213	166	174	5.2	5.5	....	....	99.9*	1.16	1.16	193	4.26
T. & N. O.	5,637.44	804,662	143	133	5.2	4.9	....†	0.37	100*	0.88	0.88	125	3.67
T. & P.	2,427.91	272,433	112	101	3.8	3.4	....	....	100	1.02	1.02	114	2.33
Tex.-Mex.	203.81	39,326	193	189	6.1	6.3	8.5	0.25	91.5	1.12	1.05	203	32.29
Total	36,279.67	4,931,335	136	154	4.5	5.1	6.8	0.56	93.2	1.02	0.99	135	3.57
Grand Total United States	336,839.80	43,134,273	128	131	4.3	4.4	14.3	0.79	84.5*	1.29	1.22	156	3.07
Canadian Roads:													
C. N.	26,862	5,758,287	214	219	7.6	7.7	70.8	0.61	29.2	1.29	0.81	173	5.94
C. P.	21,274	3,064,394	144	158	5.1	5.6	52.5	0.54	47.5	1.19	0.85	122	4.02
T. & N. O.	574	137,300	267	245	8.8	8.4	100	0.65	....	....	0.65	174	6.90

* Owing to the fact that the total number of ties inserted on some roads included some second-hand ties, ties other than wood, tie blocks, etc., the percentages of treated and untreated ties do not total 100 per cent in all cases.

‡ These are storekeepers' average costs of ties charged out and used. They are not the actual costs or the prices paid for ties purchased during the period.

† Proportion is less than 0.1 per cent.

maintained track, with the exceptions to be noted, did not vary widely from 1939. Among the noteworthy changes were the Spokane, Portland & Seattle, 183-264; the Pittsburgh & Shawmut, 204-255; the Pittsburgh & West Virginia, 169-310; the Pennsylvania-Reading Seashore Lines, 89-127; the Richmond, Fredericksburg & Potomac, 268-357; the New Orleans, Texas & Mexico, 211-130; the Kansas, Oklahoma & Gulf, 128-53; the Missouri-Kansas-Texas, 116-76; the New York, New Haven & Hartford, 82-53; the Baltimore & Ohio, 158-113; the Bessemer & Lake Erie, 192-148; the Chicago, Indianapolis & Louisville, 148-98; and the Virginian, 173-143. In each of these comparisons, the figures for 1939 are given first. Five roads varied by only one tie from the numbered renewed in 1939.

Of equal interest are the comparisons by regions, these being as follows: New England region, 99-92; the Great Lakes, 101-104; the Central Eastern, 105-99; the Pocahontas, 79-77; the Southern, 171-169; the Northwestern, 152-153; the Central Western, 128-122; and the Southwestern, 151-136. For the United States as a whole, the comparison is 132-128; and for the three Canadian roads, 209-208.

Further analysis of the tie-renewel statistics reveals that in 1940 treated ties were applied exclusively on 47 roads, compared with 41 in 1939, and that only 6 roads used no treated ties, compared with 12 roads in the previous year. On 42 other roads more than 80 per cent of the ties applied were treated; on 7 roads the percentage of treated ties ranged from 60 to 80; on 13 roads from 40 to 60 per cent of the ties inserted were treated; on 6 roads the treated ties represented from 20 to 40 per cent of the total number applied; and on 13 others the treated ties ranged from negligible to 20 per cent.

Relatively, in 1940 there was a slight decrease of 0.3 per cent in the use of treated ties, treated ties having constituted 84.5 per cent of all ties inserted in replacement in 1940, compared with 84.8 per cent in 1939. This can be accounted for by the larger use made of second-hand ties in 1940. Numerically, the decrease was 1,377,170, from 38,253,538 treated ties in 1939 to 36,876,368 treated ties in 1940, representing an absolute decrease of 3.6 per cent. The decrease in untreated ties amounted to 188,157 ties, or 2.9 per cent, while the number of second-hand ties inserted increased 95,568, or 24.7 per cent.

The tabulation contains a column showing the five-year average renewals for each road, which reveals that the roads, excluding the shorter lines, having the lowest five-year averages per mile of maintained track were the Norfolk & Western, 41; the Reading, 42; the Lehigh Valley, 43; the Pittsburgh & Lake Erie, 63; the Central of New Jersey, 64; the Delaware, Lackawanna & Western, 69; the New York, New Haven & Hartford, 74; the Chesapeake & Ohio, 80; and the Pennsylvania, 81.

The five-year average for the 131 railroads in the United States was 131 ties to the mile; and for the roads in Canada, 207.

Three measures of tie renewal policies are shown in the last three columns of the accompanying table. One of these gives the average cost of wooden crossties; another gives the cost of tie renewals per mile of maintained track; and the final column gives the cost of wooden crossties per thousand equated gross-ton miles.

The data included in the table cover a total of 336,839.8 miles of maintained tracks, compared with 338,875.43 miles in 1939, a decrease of 2,035.63 miles.

N. J. Roads Get A Break on Taxes

RAILROADS operating in New Jersey will receive a certain measure of relief from present confiscatory tax levies of the state by virtue of four bills passed by both houses of its legislature early on the morning of July 22. After stormy, all-night sessions in an atmosphere of a political feud, the vote in the Assembly was 33 to 22 and in the Senate, 12 to 3. Three legislators in the Assembly and two in the Senate provided the margin for passage. The bills had been submitted for consideration by Governor Charles Edison and received his support throughout, thereby creating a bitter fight with Mayor Frank Hague of Jersey City, who fought the measures as the work of "the rich and powerful railroad lobby."

Basically, the bills would modify the method of taxation from a rigid *ad valorem* levy to a combination of property tax and franchise tax graduated according to earnings. It is the Governor's opinion that in good years the carriers will pay as much if not more than in the past, but will receive needed relief automatically in bad years. Based on recommendations made by a representative advisory committee (see the *Railway Age* for March 8, page 434, and June 21, page 1129), the bills permit the roads up to 20 years to make good unpaid and withheld taxes aggregating $34,268,000, but the state will waive penalty and interest amounting to about $16,000,000. For the future a flat three per cent will be levied on assessed value of property, in substitution for a "piece-meal" scheme of property assessment which has resulted in tax levies as high as 22 per cent of total gross revenues of the carriers. In addition a franchise tax based on net earnings would be levied, that for each year to be based on earnings of the previous year.

That the tax bills will not be an unmixed blessing is indicated by a statement issued by Walter Kidde, trustee for the New York, Susquehanna & Western, several days before their passage. It was his contention that, while the bills would reduce taxes on the carriers as a whole, they severely penalize roads with substantially all mileage lying within the state. He estimated that the Susquehanna would suffer an increase of nearly 60 per cent in its taxes for 1941 under the new provisions. For such a situation, he proposed an amendment limiting to 50 per cent the amount of track-mileage to be used in calculating the franchise base.

The importance of the railroad tax controversy as a political issue in the state and the failure of one of the parties to treat the problem as an economic one are demonstrated by prepared statements made public by Mayor Hague and Governor Edison, respectively, shortly after passage of the bills. The former accused his opponent of collusion with the railroads, stating that he "is disqualified from taking part in this controversy because his company (Thomas A. Edison, Inc.) is doing millions of dollars of business annually with these railroads." In reply, the Governor declared that he was glad that the company sells large orders of batteries to the carriers, adding that one of its largest railroad customers—the Pennsylvania—gains nothing from the compromise because it owes no back taxes and "stands to be taxed more than a million dollars above the old rates under this new law."

Continuing his reply, he wrote: "Our company is also in the cement business. I am using the gubernatorial office to oppose the building by the State Highway Department of a glittering, super, twelve-lane highway

across New Jersey, which project could use up hundreds of thousands of barrels of cement . . . a strange way to curry favor for the Edison companies." In reference to Mr. Hague's attitude toward the railroads, Governor Edison declared: "To Hague there is no railroad problem. To Hague, those enormous six-wheeled motor trucks rolling along the highways carrying the freight that used to go by rail are just figments of the imagination. To Hague, the railroads of New Jersey have been making vast profits during the last decade and those that have gone into bankruptcy have merely done so because their managers liked the color of red ink on their books better than black ink."

New Jersey taxes its railroads three times more per mile than the next most rapacious of our 48 states and, utterly disregarding the drastic fall in their gross revenues, has maintained peak assessments on their property during the depression. At the same time it is one of the most generous furnishers of super-highways in the country, allows trucks top weights and sizes and is one of the few states which does not regulate the trucking industry. Since it serves as "corridor" between New York and the hinterland, and has taxing-power over the extensive main line and terminal properties of trunk line railroads serving the metropolis, the state has long bled the railroads for a large portion of its property-tax take, all out of proportion to its population or traffic contributions. In desperation the carriers, in 1931, challenged the constitutionality of a taxing policy which assessed railroad property at 100 per cent and other property at 60 per cent and took no account of changed conditions in the transportation field. The six protesting roads ran the gauntlet of tax commissions, state courts and federal courts without success and have found a certain measure of relief only now in the state legislature. The Central of New Jersey was thrown into trusteeship in 1939 solely to protect its property from depredations of New Jersey tax collectors and the continued solvency of the Lehigh Valley has been held to depend largely on a favorable settlement of its tax bill, past and future.

Most satisfactory background on the New Jersey tax problem is a recently-published study* by Dr. Harley L. Lutz, professor of public finance at Princeton University and former president of the National Tax Association. Its contents are of nation-wide interest, for if the particular controversy in question is local in direct effect, the fundamentals involved affect every road in the country to a greater or lesser extent—the money and wealth at stake in the New Jersey situation itself is no small chunk of national railroad assets.

The tax collector divides New Jersey's railroad property into four classes: Class I, main stem, including right-of-way not more than 100 ft. wide; Class II, all other real property, including stations whether on right-of-way or not; Class III, rolling stock and other personal property; and Class IV, remaining property and franchise. Class II property is theoretically "pickin's" for the municipalities, to be taxed at local rates. The basic feature of tax assessment has remained unchanged since 1906.

Following popular pressure for higher railroad taxes at the turn of the century, a procedure was prescribed for taxation which subjects the carriers to an average state rate of taxation which reflects generally the high assessments and tax rates of congested municipalities: (1) local assessors certify to the state the "true value" of all railroad property in their districts, including Class II property; (2) the taxes to be raised in each district are computed by multiplying the value of all property therein by the local rate of taxation; and (3) the average state rate is the result of dividing the aggregate of all taxes to be raised (2) by the aggregate value of all property (1).

Under this scheme, assessments of railroad property advanced steadily to 1932; at the same time, taxes levied on these assessments advanced at a rate even more rapid than the assessments. Total assessment of Classes I, III and IV increased 23.6 per cent from 1914 to 1932 while the tax itself increased 137.5 per cent. Taxes on Class II property *increased fourfold* between 1914 and 1932. The total annual tax levy reached a peak of $20,807,985 in 1932, and has since declined only slightly.

Dr. Lutz criticizes New Jersey's taxing methods both as to procedure and actual financial burden on the carriers. The method of assessing separately parcels of property which together comprise a railroad he holds to be indefensible, calling it a piecemeal method which cannot possibly arrive at true value. He is highly critical of valuing railroad property "on the basis of what is being paid for adjoining or similar lands in other uses" —a method he describes as "bootstrap levitation." To assess in this manner is to say "that the railroad shall be valued according to the highest values which the railroad itself creates in adjoining property for other uses and to assume that the high values created by the railroad would stand alone if the railroad itself were to disappear." He blames the state for not providing an independent test of the railroads' charge of unfairness in the distribution of the tax load as between them and other property taxpayers, declaring that the state "has placed the burden of proof of such inequality upon the railroads, and it has thereby failed to discharge an important public duty, namely, the provision of definite assurance of uniformity of treatment for all classes of taxpayers."

The actual monetary burden of railroad taxation in the state is strikingly spotlighted by the book's revelation that Class II railroad property alone is assessed 12.8 per cent of total assessment of *all* property in populous and expensive Hudson county. Class II railroad property (principally New York Central) pays 42 per cent of all property taxes in Weehawken—which town, incidentally, the author calls "an incorporation of railroad yard and dock terminal properties as a municipality." The habitual dependence of such artificial taxing districts upon railroad taxes for the greater part of their income obviously creates powerful pressure groups which block any reforms in taxing methods tending to reduce their share of the spoils.

On the whole, Dr. Lutz sees little justice in the *ad valorem* principle of railroad taxation as a whole, because of the impossibility of finding "true value" and its failure to consider ability to pay. In an admirably concise paragraph he strips off the cant and fiction of valuation for tax purposes: "In the case of railroads and other large business enterprises, *ad valorem* taxation is simply one method of determining the portion of the total taxes which public policy has established shall be paid by these enterprises. Its use for this purpose compels resort to artificial and fictitious devices, in the application of which almost any desired result can be obtained. That is, a method of valuation can be employed which will result in a large tax contribution from the railroads, or a method can be found which will result in relatively low taxes. There is no absolute criterion of a 'fair' or 'equitable' tax on a railroad. The closest practical approach to such a goal is likely to occur when the amount of such tax is determined primarily with a view to its effect upon the long-run performance, by the railroad, of its economic function of transportation."

* "The Taxation of Railroads in New Jersey." Published by Princeton University Press, Princeton, N. J.

Motor Transport Section

Carriers in the Southwest Run Modern Equipment Over Long Routes to Give Merchandise Speedy Dispatch

The Railroads Put in More Highway Services in 1940

Presidents tell their stockholders of intensified activity in co-ordinated facilities

Part II — Southwest and West

HIGHWAY operations by railroads continued to expand during 1940, as evidenced by references to them in annual reports for 1940. Excerpts from the reports of roads in the East and South were presented in Part I of this article appearing in the *Railway Age* of June 28. Significant comments to stockholders and recapitulation of statistics from the reports of roads in the Southwest and West are set forth below.

The investment account of the St. Louis Southwestern showed that the road continued to hold 1,000 shares of the Southwestern Transportation Company, having a book value of $1,481,100 and made advances amounting to $73,385. The separate income account appearing for the transportation company showed operating revenues during the year of $867,948, as compared with $793,958 in 1939; operating expenses of $746,012, as compared with $726,448 in 1939; resulting in a net revenue of $121,936, as compared with $67,510 in 1939. The company showed a net income for 1940 of $74,600, as compared with $35,722 for 1939.

President M. S. Sloan of the Missouri-Kansas-Texas told stockholders that late in 1939 the road inaugurated a truck service in Kansas by contract with the Columbia Transfer Company of Kansas City, Mo., for the handling of merchandise traffic. He declared that these operations during 1940, co-ordinated with railroad service to distributing points "helped to retain and attract business to M-K-T lines that would otherwise have been lost to competitive agencies."

A report of the St. Louis-San Francisco, submitted by J. M. Kurn and J. G. Lonsdale, trustees, stated that operations of the Frisco Transportation Company, organized in 1937, were extended during 1940 and that "these operations provide more expeditious and economical handling of passengers and merchandise traffic and have enabled the discontinuance of more costly local mixed-train rail service."

A separate income account appearing for the Kansas City Southern Transport Company—wholly-owned subsidiary of the Kansas City Southern—indicated operating revenues during the year of $96,599, as compared with $65,324 in 1939; and operating expenses of $86,515, as compared with $61,357 in 1939; leaving a net operating revenue of $10,084 as compared with $3,967. The report showed that the railroad had made advances to its affiliate totaling $44,000, as of the close of the year.

The Missouri Pacific Transportation Company inaugurated a new bus route of 78 mi. between Riviera, Tex., and Harlingen on December 18, 1940. During the year it discontinued a 111-mi. route between Eads, Colo., and Pueblo; 25 mi. between Yancopin, Ark., and McGehee; 20 mi. between Bastrop, La., and Sicard; 39 mi. between Houston, Tex., and Angleton; 25 mi. between Brownsville, Tex., and San Benito; and 46 mi. between Landrum, Tex., and Edinburg. These changes, together with minor rearrangement of other routes shortened the mileage operated by the company by 186 mi. At the close of the year it was operating 4,012 mi. of motor vehicle route. During 1940 the M. P. T. Co.

purchased ten new and one second-hand motor bus and retired nine from service. As of December 31, 1940, it owned 142 motor coaches and seven trucks.

During the year the Missouri Pacific Freight Transport Company was granted certificates of convenience and necessity by the Railroad Commission of Texas for truck operations which it inaugurated as follows: April 3, Taylor, Tex., and Longview; April 15, Navasota, Madisonville and Huntsville; December 17, between Raymondville, Odem, Victoria and San Antonio. The securities table of the railroad showed holdings of 250 shares of stock of the Missouri Pacific Freight Transport Co. having a par value of $75,000 and 1,000 shares of M. P. T. Co. having a par value of $100,000. The road also held notes as of December 31, 1940, for a total of $55,367 for the M. P. F. T. Co. and for $250,531 for the transportation company. The road had also made advances of $5,585,577 to the M. P. T. Co.

Highway Services in West and North

A list of investments in affiliated companies by the Northern Pacific showed that the railroad continued to hold stock in Northern Pacific Transport Company to the extent of $1,000 book value. As of December 31, the road had advanced $388,500 to the transport company, as compared with $341,500 as of December 31, 1939. During the year it received $18,813 in dividends or interest rates from its affiliate, as compared with $33,525 in the previous year.

The Atchison, Topeka & Santa Fe owned the entire issue of 90,000 shares outstanding of Santa Fe Trail Transportation Company, representing an investment of $1,182,016; and the outstanding capital stock of the S. F. Transportation Company (California) having a book value of $11,000. As of December 31, the road had advanced a total of $3,502,706 to the S. F. T. Transportation Company; and $1,298,521 to the S. F. Transportation Company (California). According to the income accounts for affiliated companies the S. F. T. Transportation system earned a gross income of $5,020,312, as compared with $4,837,518 in 1939; net operating expenses of $4,515,514, as compared with $4,408,791 in 1939; incurred a net deficit of $165,073, as compared with a net deficit of $242,782 the previous year. The S. F. T. Company (California) had a gross income of $969,236, compared with $707,295 in 1939; expenses of $984,790, compared with $828,085; and a net deficit of $115,759, compared with $200,817 in the previous year.

W. A. Harriman, chairman of the board of the Union Pacific, told stockholders that Interstate Transit Lines and Union Pacific Stages, Inc., took delivery of ten 37-passenger and five 33-passenger streamlined coaches during the year and ten 37-passenger and fourteen 29-passenger coaches were ordered for delivery in 1941. During the year combination bus stations and garages were constructed at Cheyenne, Wyo., and Laramie; a bus depot at Ogden, Utah; and a shop, garage, and gasoline storage facilities at Pocatello, Idaho.

Interstate Transit Lines and controlled companies—70.9 per cent owned by the railroad, operating buses in U. P. and C. & N. W. territory between Chicago and Los Angeles—earned gross revenues of $3,949,185, compared with $4,056,950 in 1939; had expenses and rents of $3,057,869, as compared with $3,030,483; net operating revenue of $891,317, as compared with $1,026,467 in the previous year. U. P. Stages—wholly-owned affiliate operating buses in U. P. territory from Salt Lake City, Utah, to Portland, Ore.,—had gross revenues during the year of $1,473,596, as compared with $1,464,512; expenses and rents of $1,138,396, as compared with $1,092,022 and a net operating income of $335,201, as compared with $372,490, the previous year. The Union Pacific received and credited to its income account dividends of $168,269 from Interstate Transit Lines, a decrease of $117,617 under dividend payments received in 1939. According to the list of affiliated companies of the road it continued to hold directly as of December 31, 1940, 186,965 out of a total of 263,829 shares of capital stock of Interstate Transit Lines; the entire 30 outstanding shares of U. P. Stages and the entire 6,500 outstanding shares of U. P. Stages, Inc.

The report of the Great Northern shows that it owned 29 highway motor vehicles for revenue service as of the close of 1940, as compared with 26 units in 1939. The investment account of the Chicago, Rock Island & Pacific showed that the railroad company continued to hold the entire outstanding stock issue of the Rock Island Motor Transit Company, having a face and book value of $10,000 and made advances to the company of $299,682 as of the close of the year, as compared with $233,761 at the close of 1939.

President Ralph Budd of the Chicago, Burlington & Quincy, reported that the Burlington Transportation Company, wholly-owned affiliate of the road sustained a net operating loss of $86,923 in bus operations during the year, compared with a net loss in 1939 of $79,827. Operating revenues in 1940 increased $340,472, or 18 per cent over 1939, while expenses increased $341,665, or 17 per cent. During the year the subsidiary placed in service 19 new Diesel-powered, air-conditioned buses, 15 having capacity for 33 passengers and four for 13 passengers. Ten cruiser-type, Diesel-powered, air-conditioned 33-passenger vehicles were ordered in 1940 for delivery this year. Mr. Budd added, "The continuance of the practice of improving depot facilities and quality of service generally has aided materially in obtaining a greater volume of business."

The Truck division earned a net profit of $96,640 during the year, compared with a net profit in 1939 of $70,392. Operating revenues in 1940 increased $107,241, or 13 per cent over 1939, while expenses increased $79,361, or 10 per cent. This division placed in service 29 new units of equipment during the year, the total comprising 14 tractors, 13 semi-trailers and two trucks.

Mileage statistics for the Burlington Transportation Company during the year recorded 13,400,000 bus-miles (an increase of 16 per cent over the previous year), operating over 7,945 route-miles, and 4,400,000 truck miles (an increase of 10 per cent over 1939), operating over 3,173 route-miles. The report points out that higher operating costs of both bus and truck divisions are partially attributable to compliance with the 40 and 42-hr. week and an increase in drivers' and shop employees' pay.

Reporting for the Denver & Rio Grande Western, Wilson McCarthy and Henry Swan, trustees, pointed out that during 1940 outstanding capital stock of the Denver Colorado Pueblo Springs Motor Way, Inc., was increased from 113,400 to 147,420 shares through the use of proceeds of dividends paid on 1939 operations. During 1940 a dividend of 25 per cent was paid on capital stock, of which the railroad continues to hold 50 per cent. The investment account of the railroad showed that as of the close of the year it held $37,600 of $45,000 outstanding capital stock of Rio Grande Motor Way, Inc., and held notes of its affiliate to the extent of $106,000. The railroad received dividend income totaling $18,427 from its motor carrier affiliates during 1940, as compared with $13,010 in 1939.

The annual report of the Southern Pacific, submitted by A. D. McDonald, president, presented detailed in-

formation with respect to operations of a number of directly-owned or affiliated motor transport units, and summarized the widespread interest of the railroad in such operations. As of the close of 1940, companies controlled entirely by Southern Pacific provided highway services extending over 9,639 mi. of road, as compared with 7,745 mi. at the close of 1939. It was pointed out that services for less carload freight were improved during the year by expansion of motor truck services coordinated with railroad operations.

Wholly-owned trucking and transport companies operating both highway truck and city drayage services and performing pick-up and delivery at various points along the railway owned 227 highway trucks, 163 trailers, 92 highway tractors, seven company service trucks and five motor buses, as of the close of the year; operated 9,639 mi. of truck routes and 16 mi. of bus routes and performed drayage in 92 cities along Southern Pacific lines. Miles-of-truck-route operated represent an increase of 25 per cent over the previous year. This increase was principally in Oregon and Northern California and resulted chiefly from acquisition by Pacific Motor Trucking Company of control of Pacific Truck Express by purchase of its entire capital stock on July 1, 1940. In addition, wholly-owned electric railway companies in California operated 251 motor buses over 747 mi. of route and used an additional 101 buses in joint operation of 132 mi. of bus route. The report said "service by these companies is being further extended as conditions warrant."

Several of the wholly-owned motor transport companies were afforded separate income accounts in the report. Pacific Motor Trucking Company, operating 5,976 mi. of truck routes, enjoyed operating revenues of $1,518,994 during the year, as compared with $1,252,904 in 1939. Pacific Motor Transport Company, operating 16 mi. of bus route had gross operating revenues of $2,237. Southern Pacific Transport Company, operating 1,599 mi. truck route, earned a gross of $328,253 (after deducting $654,971, representing contract payments to railroad carriers), as compared with $343,731 in 1939. Southern Pacific Transport Company of Louisiana, operating 740 truck route-mi., had gross operating revenues of $73,864 (after deducting $169,230, representing contract payments to rail carriers), as compared with $73,478 in 1939.

The wholly-owned Northwestern Pacific was authorized on May 21, 1940, to abandon all electric interurban service and passenger ferries between San Francisco, Cal., and communities in Marine county upon establishment by Pacific Greyhound Lines of a substitute bus service for commuters. Substitution service was partly established on October 1 and made completely effective March 1, 1941, on which date operation of trains and ferries was discontinued. Passengers and baggage for remaining steam-powered trains travel between San Francisco and the Sausalito railroad terminal by Pacific Greyhound.

The report points out that the net deficits of the wholly-owned Pacific Electric for 1940 decreased considerably from former years, due to savings effected under a rehabilitation program involving discontinuance of unprofitable lines and improvement of service. Under the program motor bus service was inaugurated in lieu of the number of abandoned railroad routes.

The report also discussed operation of motor bus concerns affiliated with Southern Pacific. In this connection it was pointed out that the railroad at the end of the year continued to hold 35.9 per cent stock ownership in Pacific Greyhound Lines, which owned 628 buses operating over 9,629 miles of route in Oregon, California, Arizona, New Mexico, Texas, and Utah. While these services are operated independently, in certain instances co-ordination with train services of the Southern Pacific has been effected.

Pacific Greyhound lines had a net income after all charges of $1,439,618 in 1940, a decrease of 23 per cent, compared with 1939. Its buses traveled 37,114,116 mi. during the year and carried 11,489,378 revenue passengers. The Southern Pacific, at the close of the year, had a 5.65 per cent stock ownership in Southwestern Greyhound Lines, and in addition, 9.52 per cent through the St. Louis Southwestern, 87.32 per cent of whose outstanding capital stock is owned by Southern Pacific.

Southwestern Greyhound at the end of the year operated 213 buses over 7,107 route miles, in territory east of Denver, Colo., Albuquerque, N. M., and El Paso, Tex., to Kansas City, Mo., St. Louis, Memphis, Tenn., and Lake Charles, La. This company had a net income after all charges of $824,121 in 1940, a decrease of 17 per cent under 1939. Its buses traveled 22,904,403 mi. during the year and carried 3,346,305 revenue passengers.

Rail-Highway Tonnage

THE Interstate Commerce Commission has recently released the figures showing the extent of railway-highway service for the year 1940, on Class I lines, as reflected in tons and revenue ton-miles. The figures include only highway traffic moved by or for the railways in cases where railway operating revenues have been credited with amounts received from such traffic or charged with amounts paid to others for performing the service. The regular traffic handled by separately incorporated highway carriers in which the railways have investments is not included.

For the United States as a whole, 1,364,423 revenue tons were so carried in 1940, representing 4.86 per cent of all L. C. L. tons handled, and comprising 53,892,000 revenue ton-miles. The Eastern district led in tonnage, with 712,113 tons (4.84 per cent of all L. C. L. traffic) and 12,168,000 ton-miles. The Western district far exceeded this in ton-miles and percentage of L. C. L. traffic so handled, with 39,419,000 ton miles and 8.82 per cent respectively, but only handled 600,076 tons. The Southern district handled only 52,234 tons, 0.8 per cent of the total L. C. L. tonnage, or 2,305,000 ton-miles.

Individual railroads handling more than 50,000 tons during the year were as follows:

Pennsylvania	341,306
N. Y. N. H. & H.	175,589
S. P.	140,102
C. & N. W.	87,687
M. P.	60,046
N. Y. C.	52,733

Fifteen railways handled a million or more revenue ton-miles by truck in 1940, as follows:

Pennsylvania	6,927,000
St. L. S. W.	6,020,000
S. P.	5,855,000
St. L.-S. F.	4,899,000
A. T. & S. F.	3,790,000
M. P.	3,052,000
G. N.	2,540,000
N. Y. N. H. & H.	2,398,000
C. R. I. & P.	2,365,000
C. & N. W.	2,309,000
D. & R. G. W.	1,733,000
T. & P.	1,280,000
G. C. L.	1,269,000
N. P.	1,135,000
Seaboard	1,060,000

In the United States as a whole, 19 Class I railways handle more than 10 per cent of their total L. C. L. tonnage through rail-highway co-ordination, 5 in the Eastern district, 2 in the Southern district and 12 in the Western district.

NEWS

Parley on Speed for Car Material

Carriers and car builders get together on plans to boost rolling stock supply

Consideration of ways and means of assuring an adequate flow of materials to keep car builders busy featured discussions of the equipment situation at a July 18 meeting of the Association of American Railroads board of directors in Washington, D. C. More than the usual number of railway executives were on hand for the session which was attended also by Ralph Budd, defense transportation commissioner, and two representatives of the American Railway Car Institute—J. F. MacEnulty, president, and W. C. Tabbert, secretary.

Generally the discussions disclosed how the builders are booked to capacity through the second quarter of 1942; but their inability to obtain materials has delayed deliveries until the schedule is already some 20,000 cars behind what it would have been if the materials had been forthcoming promptly. It was recognized that A-3 preference rating given car builders by the Office of Production Management is a pretty high rating; so the problem is to see what can be done to make the rating sufficiently effective to prevent curtailed operations. Meanwhile, it was stated, the car builders have thus far experienced no difficulty in obtaining the necessary labor.

A. A. R. officers discussing the meeting's proceedings emphasized that the 20,000-cars-behind-schedule situation in the building industry does not mean that the railroads will not have by October the car supply which they have anticipated. They pointed out that repairs of bad-order equipment are going forward at a greater rate than expected; and thus the ownership of serviceable cars next October will be in accordance with previous predictions. It was also stated that the 1941 situation did not come in for much discussion, because it was recognized that everything possible was already being done about the current year. In that connection also, the executives present were said to be doing no worrying about the remainder of this year, although all realized that "they've got to railroad."

With respect to subsequent years, the directors rediscussed and reaffirmed the plan for securing the ownership of 1,800,000 cars by October, 1942. Because orders already placed by individual roads will keep the builders operating at capacity until well into 1942, it was said, the executives found no occasion to discuss any plan whereby the A. A. R. might organize a corporation to acquire freight cars and thereby maintain an industry pool. The same reasoning would apply to suggestions that the Reconstruction Finance Corporation might acquire a "stock pile" of rolling stock. In other words, the desired result of keeping the builders' plants operating to capacity is being accomplished under the normal plan of having the equipment purchased by individual roads; as long as that situation continues, one A. A. R. officer said, there is no need for a change. And present bookings will maintain that situation for another year at least.

Red Cap Hearing Set for New York

A hearing on wages and hours for red caps will be held in New York City beginning August 4, General Philip B. Fleming, Administrator of the wage and hour division, U. S. Department of Labor announced on July 23. Thomas Holland, director of the research and statistics branch of the division will preside.

The hearing will be held at 10:00 A. M. in the Chambers of the City Council, City Hall. It will cover employment of red caps in all of the railroad terminals in New York City, Boston, Detroit (excepting the Pere Marquette Station), Cleveland, Buffalo, Toledo, Rochester, Albany, Utica, Syracuse, Philadelphia and Baltimore.

The New York hearing is the third of a series; hearings have been held in Chicago and St. Louis. Dates for hearings in Dallas, Tex., and Washington, D. C., will be announced later, the Administrator said.

Results of National Mediation Board Elections

Results of recent elections in representation-of-employees cases have been announced by the National Mediation Board. On the Monongahela Connecting the Board conducted an election to determine who should represent the carmen and their helpers. As a result of the voting the Steel Workers' Organizing Committee, C. I. O. and the American Federation of Railroad Workers each received 42 votes, while one other group received two votes out of 88 cast. Since no contestant received a majority, the Board has closed the case without certification.

On the South Buffalo the Steel Workers' Organizing Committee, C. I. O., has been chosen to represent the machinists, boilermakers, blacksmiths, electrical workers, the helpers and apprentices of the foregoing, and the railway shop laborers; and maintenance of way employees.

Rules on Split Cars Stay Tough

I. C. C. rejects examiners' report by 6 to 5, with spirited dissent by Porter

The Interstate Commerce Commission, in a six to five decision, has failed to approve various proposals whereby Western railroads have undertaken to meet the requirements of the commission's findings in the Freight Forwarding Investigation. The commission's decision flatly rejects the proposed findings of its Examiners R. N. Trezise and T. Leo Haden, who had recommended that the carriers be given authority to make the desired changes in loading practices in the West. Details of the proposed findings were given in the *Railway Age* of August 24, 1940, page 290, and in the issue of August 31, 1940, page 320.

The title case is I. & S. Docket No. 4664, Handling Carload Shipments in West, but the commission's report also embraces I. & S. Nos. 4668 and 4678, which are concerned, respectively, with the loading of multiple cars in the West and the furnishing of cars at variance with shippers' orders.

Commissioner Porter wrote a dissenting-in-part opinion in which he was joined by Chairman Eastman and Commissioners Mahaffie, Miller and Patterson. Commissioner Porter felt that the majority "fail to face the realities" and that whatever discrimination there now exists in favor of freight forwarders "will continue despite the pronouncements of the majority."

As pointed out in the proposed report, the practices involved in the title case were among those found by the commission in the Freight Forwarding Investigation to be without tariff authority and in violation of section 6 of the Interstate Commerce Act. They included the so-called "marriage rule" under which certain of the respondent railroads permitted forwarders to load a car at one point and combine it in billing with another car loaded at another point, applying the carload rate on the basis of a single shipment from billing origin to destination. The examiners would have had the commission find not justified the suspended schedule whereby the carriers first proposed to embody the "marriage rule" in their tariffs—such a finding to be without prejudice to the establishment of a substitute or amended "marriage rule" as submitted at the hearing.

After declaring that the carriers' pro-

(*Continued on page 174*)

"RRs Can't Spare Mechanics"—Budd

Folly to try to increase production of war materials if transport is lacking

Ralph Budd, transportation commissioner of the National Defense Advisory Commission, believes that railroad mechanics can make their best contribution to national defense by staying in railroad shops instead of going to the shipbuilding and aircraft industries. This view was expressed by Mr. Budd after a conference of railroad officers and railroad labor leaders called by Sidney Hillman, associate director general of the Office of Production Management "to consider the integration of railroad maintenance employees into the national defense labor program" had been held in Chicago on July 22.

"I have never heard of a suggestion more threatening to the transportation structure during the defense emergency," declared Mr. Budd, in commenting on Mr. Hillman's suggestion that some 100,000 of the railroads' 400,000 maintenance workers be transferred to the shipbuilding and aircraft industries. "Railroads," he continued, "not only cannot sacrifice manpower at this time but they need every available mechanical service if they are to escape being crippled."

Mr. Budd then proceeded to point out that the railroads had taken more of the transportation burden than anyone thought they could, due largely to the taking off of intercoastal and intracoastal ships and the large increase in the amount of iron ore being hauled. Moreover, said the Burlington president, the carriers are being hard-pressed because of their inability to get new cars on order due to the difficulties of the car builders in obtaining the necessary steel. He emphasized again the fact, which he pointed out in Chicago last week, that the railroads were going to be short some 20,000 cars by October 1 because steel is not forthcoming to the carbuilders.

Mr. Budd thinks it would be little short of folly to divert 100,000 skilled railroad mechanics to other industries at this time when the railroads need all the mechanics and shops that they have available to keep all their cars in repair. He then pointed out that it would do little good to the national defense program to take needed workers away from the railroad industry and permit that industry to fail to meet the demands on it just in order to increase the production of ships or airplanes. After all, he observed, it won't do much good to produce all the military equipment if the country hasn't the transportation system to transport the materials to the manufacturing plants for fabrication. In other words, it is Mr. Budd's feeling that transportation must come first before you can have the necessary production, and it would be foolish to cripple transportation at this time just to speed up production.

As an alternative, Mr. Budd suggested that it would be better to take mechanics from another field of transportation, the motor car industry, than to take them from the railroads. These mechanics, he declared, could be just as easily trained for shipbuilding and aircraft work as could the railroad mechanics, and the transfer would be much less dangerous to the welfare of the country and the defense program.

The conference, according to Mr. Budd, who did not attend, took no action of any kind, but railroad representatives were united in demanding that no attempt be made to divert their employees to any other industry at this time when railroad facilities are being taxed to the utmost.

Among those attending the conference, which was presided over by Eli L. Oliver, chief labor advisor on the staff of the labor division of the O. P. M., were J. J. Pelley, president of the Association of American Railroads; H. A. Scandrett, trustee of the Chicago, Milwaukee, St. Paul & Pacific; R. L. Williams, chief executive officer of the Chicago & North Western; J. L. Beven, president of the Illinois Central; Edward Flynn, executive vice president of the Chicago, Burlington & Quincy; B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor; E. E. Milliman, president of the Brotherhood of Maintenance of Way Employees; and A. E. Lyon, president of the Brotherhood of Railroad Signalmen of America.

Picnic Train Revived

The picnic train, vastly popular a generation ago and all-essential in prior generations, was revived on July 19 when more than a thousand people left the Chicago Union Station on board a Chicago, Milwaukee, St. Paul & Pacific special for Fox Lake, Ill., to attend the annual picnic party of the Guardian Electric Company.

Transit Men to Meet September 29 to October 2

The American Transit Association will hold its 60th annual convention at the Chalfonte-Haddon Hall hotel, Atlantic City, N. J., September 29 to October 2, inclusive. A manufacturers' exhibit in the lobby and lounge of the convention hotel is planned.

Troop Movements May Curtail Special Excursions

"To protect the supply of passenger coaches for enlarged troop movements which are in prospect," directors of the Association of American Railroads have agreed "that railroads would not operate special excursions without previously consulting the Military Transportation Section of the Car Service Division." This action was taken at the A. A. R. board's July 18 Washington meeting, other proceedings of which are reported elsewhere in this issue.

As noted in the *Railway Age* of July 19, page 130, the Office of Production Management has indicated that it will not be disposed to grant preference ratings for materials used in passenger-car construction.

Consent Decree in Trust Case

Bars are down for joint rates with trucks in case pressed by "Buster" Arnold

The government's anti-trust action against the Association of American Railroads, its members and officers, was settled on July 18 by the signing of a civil consent decree, enjoining certain practices held to be in violation of the anti-trust laws. The case, which was filed by the Department of Justice on October 25, 1939, and reviewed in the *Railway Age* of October 28, 1939, page 670, was instituted under provisions of the Sherman Act and charged that the railroads had violated the law by refusing to enter into through routes and joint rates with motor carriers. This violation of the Sherman Act was accomplished, the government alleged, by the passage of certain resolutions by the board of directors of the A. A. R. and agreement thereto by the member roads, thus constituting a conspiracy in restraint of trade.

The A. A. R. board later rescinded the resolutions and contended in court that the case was moot and should be dismissed. Justice Jennings Bailey of the District Court of the United States for the District of Columbia refused to uphold this contention and ruled against the A. A. R. in an opinion handed down in December of last year, details of which were given in the *Railway Age* of December 7, 1940, page 874.

Specifically, the consent decree "perpetually enjoins and restrains the defendants, and each of them, and each and all of their respective agents, representatives, employees, officers, directors and members, and all persons acting or claiming to act on behalf of the defendants, from according any force or effect to the A. A. R. resolutions, or to any agreement, concert, or understanding, existing by virtue of, growing out of, or in any way attributable to, the resolutions, and from soliciting, encouraging, or coercing by any manner or means any of the defendants to abide by such resolutions, agreements, concerts, or understandings, or to accord them any force or effect."

Furthermore, the defendants are also perpetually enjoined from entering into any agreement, concert, or understanding with the A. A. R., its officers, directors or membership, the effect of which is to restrain, or tend to restrain the freedom and independence of each of the defendant railroads in accordance with its own individual managerial discretion in the matter of the establishment of through routes, joint rates, joint billing arrangements, the advancing of charges, and other mutual practices, in connection with interchange of persons and property between the defendant railroads and motor carriers.

It is further provided that for the purpose of securing compliance with the decree, and for no other purpose, duly authorized representatives of the Department of Justice shall, on the written request

of the Attorney General, or an Assistant Attorney General, and on reasonable notice, be permitted access to the defendants' books, ledgers, accounts, correspondence and memoranda relating to the matters dealt with in the decree, and be permitted to interview officers and employees of the A. A. R. and its members. Also, the defendants are required to submit reports to the Department of Justice on any matters that are necessary to carry out the decree.

The decree further provides this safeguard that the information obtained by these means shall not be divulged by any representative of the Department to any person other than a duly authorized representative of the Department, except in the course of legal proceedings in which the United States is a party or as otherwise required by law.

Finally, it is provided that jurisdiction in the case is retained for the purpose of enabling any of the parties to the decree to apply to the court at any time (upon due and reasonable notice to the adverse party or parties) for such further orders and directions as may be necessary or appropriate for the construction of or the carrying out of the decree, for the modification thereof, for the enforcement of compliance therewith, and for the punishment of violations thereof.

Judge R. V. Fletcher, A. A. R. vice-president and general counsel; J. Carter Fort, A. A. R. general solicitor; J. M. Souby, A. A. R. assistant general counsel; and Gregory S. Prince, A. A. R. attorney, signed the decree for the railroads, while Thurman Arnold, assistant attorney general, and Frank Coleman, assistant to the attorney general, initialed it for the government.

"It is anticipated," said the Department of Justice in a statement announcing the settlement of the suit, "that the decree will restore to individual railroads the freedom of action to enter into direct transportation arrangements with motor carriers. The development of more efficient and economic transportation channels is of particular concern to the Department at this time because of the necessity for speeding up transportation of materials required by the national defense program. It is also expected that the decree will foster the development of agricultural communities not now adequately served by railroads, through the establishment of transportation agreements between railroads and motor carriers."

A. A. R. Policy on Inspecting and Photographing Rail Facilities

J. J. Pelley, president of the Association of American Railroads, has written to executives of member roads a letter answering some of the more important questions which have come up in connection with the A. A. R. circular letters of February 19 and March 26 with reference to the presence of unauthorized persons upon railroad property, the photographing of railroad facilities, and the like.

Mr. Pelley's letter, dated July 15, states that the declared policy was not intended to discourage the operation of excursions of the rail-fan type, "provided such excursions do not include inspection of vital facilities such as shops, freight terminals, docks, and the like." For example, the A. A. R. president goes on to explain, "several railroads have been approached as to the idea of operating 'off the beaten track' excursions in which parties might be taken over little-used branches or interesting lines on which passenger service now is limited or non-existent, and there is no objection to such excursions."

With respect to inspection by the public of new passenger trains, new passenger stations and other facilities and equipment intended for public use, Mr. Pelley said "it was not the intention to suggest that there be any restrictions as to visiting facilities such as are commonly open to the public." Another question answered by Mr. Pelley was: "Is there any objection to reliable publications taking general ground views of railway installations, operations and equipment which are not of a vital nature?" His answer is: "From the proper authorities here in Washington, we are assured that there is no objection to the taking of such pictures by reliable publications. We are further advised, however, that the indiscriminate taking of photographs of railroad facilities, such as yards, shops, tunnels, bridges and other vital areas is not desirable and should not be permitted."

April Bus Revenues 38.6 Per Cent Above 1940

Class I motor carriers of passengers reported April revenues of $11,058,026, as compared with $7,977,981 in April, 1940, an increase of 38.6 per cent, according to the latest compilation prepared by the Interstate Commerce Commission's Bureau of Statistics from 147 reports representing 148 bus operators. Passengers carried increased 35.4 per cent, from 11,541,250 to 15,631,454.

	Passenger revenue		Passengers carried	
	April 1941	April 1940	April 1941	April 1940
New England Region	$504,421	$368,517	1,160,273	925,890
Middle Atlantic Region	1,412,723	1,126,378	2,808,833	2,393,780
Central Region	1,988,785	1,424,336	3,084,866	2,483,113
Southern Region	2,969,696	1,940,845	3,781,823	2,418,556
Northwestern Region	371,653	297,823	316,930	268,042
Mid Western Region	821,823	676,027	663,002	523,113
Southwestern Region	1,416,493	998,950	1,643,459	1,070,765
Rocky Mountain Region	89,564	78,291	69,796	67,473
Pacific Region	1,482,868	1,066,814	2,102,452	1,390,518

The breakdown by regions of the bus revenue and traffic figures, which exclude data on charter or special party service, is given in the accompanying table.

No Present Change in Defense Transport Set-Up

President Roosevelt feels that the present transportation set-up headed by Ralph Budd in the Office for Emergency Management is answering the needs of the country as they are arising. This view was expressed at the President's July 22 press conference after he had discussed the relationship between the Office of Production Management and the Office of Price Administration and Civilian Supply and had denied that he had any orders in mind to achieve greater cooperation between these two defense agencies.

However, Mr. Roosevelt went on to say that his statement that the present transportation set-up was answering current defense needs was not to be interpreted as meaning that in three or six months there might not have to be some change made. In fact, he continued, the Administration is constantly studying changes that might be made to improve the situation both in the transportation office and in OPM and OPACS.

Special Car Order No. 37 Cancelled

Effective July 15, the Car Service Division cancelled the 1941 reissue of Special Car Order 37 which was promulgated on May 1 to expedite the return home of ventilated box cars owned by Southeastern roads. The order was designed to assure an adequate car supply for the movement of perishables, principally watermelons and potatoes.

House Approves Emergency Road Bill

The House, on July 21, passed without a record vote S. 1580, the Senate-approved bill recently introduced by Senator Hayden, Democrat of Arizona, which translates into law the wishes of President Roosevelt regarding the building and strengthening of roads for emergency purposes, which were outlined in a message to Congress, details of which were given in the *Railway Age* of June 7, page 1026. Because of the fact that the House added a few minor amendments to clarify certain language, the bill will require further Senate action before it can be sent to the White House for Presidential approval.

The bill as passed by the House authorizes an expenditure of $250,000,000 for the construction of access roads to military and naval reservations and industrial sites, and for the strengthening of bridges and the widening of road surfaces in key areas. It also contains the new feature of permitting the federal government to contribute 75 per cent towards the cost of roads and the states 25 per cent instead of the regular 50-50 basis of matching funds which has been in effect for several decades.

The measure was passed in the House after extensive debate in which many members pointed out how the measure would affect their localities and improve national defense.

O. P. M. Issues Priorities for Locomotive Builders

To alleviate problems caused by a serious shortage of locomotives, the priorities division of the Office of Production Management has issued two blanket preference rating orders—designed to facilitate both

the construction of locomotives and their repair. A preference rating of A-3 will be granted to an initial list of 10 locomotive builders and also to about sixty repair plants, it was stated.

The two orders are similar in form to the blanket preference rating already granted to freight car builders. One of the new orders grants a rating for delivery of material entering into the repair and rebuilding of steam, electric or Diesel locomotives, whether for railroad, mining or industrial use. The other order grants a rating for delivery of materials entering into the construction of specified locomotives now scheduled by the builders.

Each producer or supplier granted the use of the new rating may apply it to deliveries of material entering into construction or repairs by executing a copy of the appropriate order and serving it on his suppliers. After the rating has been applied the first time, additional orders may be covered merely by citation of the rating granted originally, it was pointed out.

Use of the blanket ratings will, in the opinion of the priorities division, eliminate a great deal of paper work which is at present involved in making separate applications for ratings on each individual contract or order placed.

House Passes Stolen Cattle Measure

The House has passed the Senate-approved bill, S. 1261, which provides for the punishment of persons transporting stolen cattle in interstate commerce. A similar measure has been passed at several of the preceding Congresses, but has always been vetoed by the President, according to a statement made on the floor by Representative Case, Republican of South Dakota.

Water Carrier Decisions to Be in Regular I. C. C. Series

The Interstate Commerce Commission reports in water carrier cases under Part III of the Interstate Commerce Act covering rate matters and those covering pooling under section 5 (1) of Part I of the Act will be published in the original series of I. C. C. reports which begin with volume 1 and now run through volume 245, according to an announcement by I. C. C. Secretary Bartel. The announcement goes on to state that all reports in water carrier cases other than those covering rate matters and pooling will be published in separate volumes within that series.

Reading Issues 100-Yr. History of Motive Power

"A Century of Reading Company Motive Power" is the title of a 108-page book bound in heavy paper (9¾ in. by 6¾ in.) which has been made available by the railroad's Publicity department, Philadelphia, Pa., at $1.25 per copy. From Baldwin's first product, "Old Ironsides," built for the later-absorbed Philadelphia, Germantown & Norristown in 1832 to the latest Diesel-electric switcher, the gamut of locomotives is covered by detailed treatment of representative types. For each there appears a large-size photograph, engraving or print and text-matter giving specifications, origin, service, disposition and pertinent anecdotes. In addition, there is contained a brief history of the road by J. V. Hare, secretary-treasurer, and a color insert showing the entire "Crusader" train.

The Reading is remarkable for the number and importance of developments in locomotive design for which it was responsible. It imported many unusual locomotives from Great Britain; purchased the first Baldwin product (which the toolmaker said would be his last locomotive); encouraged Ross Winans' experiments with "Camels" for heavy freight service; and brought out the Milholland locomotive for burning anthracite and the Wootten firebox for burning waste anthracite. More recently it pioneered in "face-lifting" the steam-locomotive by "semi-streamlining" its fast Pacifics. Important in its history is the fact that it was one of the first carriers to build its own motive power and its shops at Reading, Pa., were the laboratories for many significant improvements.

B. & O. Reports Record for Freight Car Movement

The Baltimore & Ohio reports that during June the average miles-per-day movement of freight cars on the system reached 43, the highest in the company's history. This represents an improvement of 6.2 miles per day, as compared with 36.8 for June, 1940, which was the highest daily average up to that time.

The Baltimore and Ohio had about 80,000 cars in service, loaded and empty, during June, 1941. Equating other factors, the record movement per day for that month thus made available for daily service about 13,000 more cars than were available for the corresponding month of last year, or 130 freight trains of 100 cars each.

Santa Fe Subsidiary Gets "Grandfather" Authority

The Santa Fe Trail Transportation Company, a motor carrier subsidiary of the Atchison, Topeka & Santa Fe, has been authorized by Division 5 of the Interstate Commerce Commission to continue operations as a common carrier by motor vehicle of passengers and their baggage, and of express, mail and newspapers over specified routes between points in Arkansas, Colorado, Kansas, Missouri, and Oklahoma by virtue of "grandfather" rights.

At the same time Division 5 permitted the company to operate on certain new routes between Liberal, Kans., and Texhoma, Okla.-Tex., and between Ft. Scott, Kans., and Riverton.

Jones Discusses Passenger Car Pool

Questioned at his July 22 press conference on the possibility that the government might create a pool of passenger cars for troop movements, Jesse Jones, Federal Loan Administrator, said he had heard nothing about such a project. He admitted, however, that the idea of the government aiding in the purchasing of special troop-carrying equipment had been discussed at various times with Ralph Budd, transportation member of the National Defense Commission, but that nothing had been done on it and nothing is being done at present.

Mr. Jones also declared that there was nothing new on the freight car pool which was discussed at his press conference on July 9, details of which were given in the *Railway Age* of July 12, page 70.

Freight Car Loading

Loading of revenue freight for the week ended July 19 totaled 899,370 cars, the Association of American Railroads announced on July 24. This was an increase of 23,205 cars, or 2.6 per cent above the preceding week, an increase of 168,910 cars, or 23.1 per cent above the comparable week in 1940, and an increase of 247,705 cars, or 38 per cent above the same week in 1939.

As reported in last week's issue, loadings of revenue freight for the week ended July 12 totaled 876,165 cars, and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For Week Ended Saturday, July 12

Districts	1941	1940	1939
Eastern	180,551	151,081	136,222
Allegheny	189,199	156,732	128,990
Pocahontas	55,494	50,761	46,374
Southern	113,562	93,980	94,758
Northwestern	146,801	121,865	104,921
Central Western	134,173	113,153	111,109
Southwestern	56,385	49,211	47,514
Total Western Districts	337,359	284,229	263,544
Total All Roads	876,165	736,783	669,888
Commodities			
Grain and grain products	62,697	56,457	59,332
Live stock	10,177	11,627	11,844
Coal	147,492	127,371	107,118
Coke	13,576	9,949	5,958
Forest products	44,252	31,015	31,426
Ore	81,104	69,633	44,877
Merchandise l.c.l.	154,133	146,080	150,553
Miscellaneous	362,734	284,651	258,780
July 12	876,165	736,783	669,888
July 5	740,493	637,169	555,152
June 28	908,664	752,647	661,404
June 21	885,558	728,493	638,534
June 14	862,975	712,921	633,955
Cumulative Total, 28 Weeks	21,463,086	18,288,487	16,488,840

In Canada.—Carloadings for the week ended July 12 totaled 63,252, as compared with 57,238 in the corresponding week last year and 56,938 in the preceding week—according to the tabulation of the Dominion Bureau of Statistics.

Total for Canada	Total Cars Loaded	Total Cars Rec'd from Connections
July 12, 1941	63,252	26,559
July 5, 1941	56,938	28,775
June 28, 1941	63,567	31,191
July 13, 1940	57,238	22,498
Cumulative Totals for Canada:		
July 12, 1941	1,617,930	815,610
July 13, 1940	1,409,078	684,581
July 15, 1939	1,206,546	576,693

D. & R. G. W.—Climax Molybdenum Inspection Party

On July 17 and 18, the Denver & Rio Grande Western, in conjunction with the Climax Molybdenum Company, held "open house" for a party of railway engineers and manufacturers' representatives from various parts of the country who were invited to make a thorough inspection of the railroad's test laboratory at Denver, Colo., and the world's largest Molybdenum mine at Climax, Ohio. At the test laboratory, which is now being enlarged to

accommodate a substantially increased volume of work, R. McBrian, engineer of tests, and his assistants explained the use of the various units of modern laboratory equipment, and described current test work, such as Thermoflux determination of laminated sections in boiler plate and firebox steel; Magnaflux tests of locomotive and car parts; dampening capacity tests as a measure of the aging of metals; and use of polarized light to show stress patterns in plastic models. Physical tests of alloy firebox steels at controlled high temperatures indicate that the presence of molybdenum as an alloy has a definite tendency to give improved physical properties as compared with carbon steel at the high temperatures common in modern locomotive boiler operation.

On Friday, July 18, the inspection party, under the direction of D. R. Carse, New York representative of the Carbon Molybdenum Company, and E. R. Young, metallurgical engineer, motored to the company mine at Climax and inspected the extensive operations whereby 12,000,000 lb. of molybdenum concentrate were produced in 1940. It is expected that this production will be stepped up to 20,000,000 lb. in 1941. The magnitude of the highly-mechanized process by which such large production figures are realized may be appreciated from the fact that molybdenum constitutes only about six per cent by weight of the ore as mined.

Pennsylvania Opens New Ticket Office at Chicago

A new ultra-modern railroad ticket office and travel service headquarters were opened by the Pennsylvania on the first floor of the Otis building at 16 South La Salle street, Chicago, on July 14. The entire front of the 40-foot space is framed in bronze and, by setting the glass in from the normal building line, the interior wall surfaces project to the street area to form either side of the outer frame. A central column inside the center window is paneled in cream glass and the Pennsylvania's main line routes are mounted on the panel in bronze.

Entrance to the new office is through a double set of bronze-framed heavy glass doors with P. R. R. keystone pushplates. Into the red south wall has been built a Pullman roomette unit with realistic scenic background through the window. Flanking the roomette unit are frames for posters and displays.

To the rear, forming the west backwall of the public space of the new office, is the service counter section. The counter is shaped as a reverse arc and is designed to serve patrons entering from the front as well as those from the Otis building lobby to the north. The red wall behind the counter is a continuation of the curved south wall. Striking relief is added by a flower box with growing plants at one end of the counter and the west backwall is completed by a laced bamboo screen.

Outstanding among the many features of the office is a large illuminated map on a background of marble, which practically fills the entire north wall. It flashes for the benefit of the prospective traveler the names and departure times of the Pennsylvania's trains serving Chicago and other cities, and sends coursing through transparent plastics a pleasing glow along the complete route of the train. The map is dark grey with white block letters and numerals, and with the principal cities indicated in purple. Outlined in red neon are the Great Lakes, rivers and the Atlantic Ocean. The map runs continuously and the sequence is completed every three minutes.

A lounge is grouped around an illuminated structural column in the center of the office, immediately south of the illuminated map. A three-dimension display, on which scenes are built in planes around a central stand, holds a prominent place in the front window, being equally attractive from inside the office and from the street.

A dropped ceiling unit curves through the entire office and conceals lights and air-conditioning units. Indirect and lens lighting are employed to provide most unusual and attractive effects. The service counter and desks are of natural bird's-eye maple with bronze legs and the chairs and settee are upholstered in red leather to match the doors. Grey rubber flooring with blue trim covers the entire floor area.

Immediately behind the ticket office is the division passenger agent's office, where the same general color scheme prevails. Here the furniture is natural bird's-eye maple, the desk being topped in blue. The offices of R. C. Caldwell, division passenger agent, and W. P. Redmond, district passenger agent, as well as a general conference room, are separated from the work room by fluted glass partitions. At the extreme west end of the area, beyond the private offices and conference room, is the mailing and supply room.

The Service Counter Is Shaped As a Reverse Arc

Intercoastal Operators' Rights to Be Protected

The intercoastal ship operators have been assured by the Interstate Commerce Commission that their rights under the Transportation Act of 1940 will be protected if emergency shipping operations require them to interrupt their regular service.

This was made known on July 22 when the commission and the Maritime Commission announced that an agreement had been reached under which the I. C. C. will consider any changes in service resulting from compliance with the Maritime Commission requests as "beyond the control of the carrier."

Correspondence released by both agencies revealed that the Maritime Commission had informed the I. C. C. that some of the intercoastal operators were concerned regarding their position with respect to the "grandfather" clause in the event of such schedule tightening resulting in interruptions of service and had gone so far as to suggest legislation to protect their position. Instead of asking for new legislation, the Maritime Commission asked the I. C. C. if it would not be practical for it to make an official release giving assurance to operators that their "grandfather position" would be protected as of some specific date, such as March 1 or April 1, 1941.

Division 4, which handles such matters, did not feel that it could make such a definite commitment, but agreed to consider any interruptions ordered by the Maritime Commission as interruptions in service beyond the control of the carrier. Division 4 will also grant such exemptions to companies which had diverted vessels prior to the passage on July 14 of an act permitting the Maritime Commission to reroute ships.

The I. C. C.'s letter to the Maritime Commission points out that section 309 of the Transportation Act of 1940 contains specific language to the effect that interruptions of service beyond the control of a carrier are not to be considered as breaks in the continuity of service required by the statute to establish the so-called "grandfather" rights of water carriers under that section of the law.

Streamliners Go into Service July 26 and August 3

The new 17-car streamliners, "City of San Francisco" and "City of Los Angeles," will be placed in operation at Chicago on July 26 and August 3 respectively. Inauguration of the new "City of San Francisco" on July 26, will provide streamlined service every third day between Chicago and San Francisco, Cal., on a 39¾ hour schedule. Owned and operated jointly by the Chicago & North Western, the Union Pacific and the Southern Pacific, this streamliner will supplant "The Forty-Niner," which is operating on a 54-hour

schedule. The first eastbound trip will start out of San Francisco on July 29.

Installation of the "City of Los Angeles," which is owned and operated jointly by the North Western and the Union Pacific, on August 3, will provide two 17-car trains between Chicago and Los Angeles. The first eastbound trip out of Los Angeles will start August 6.

The two streamliners embody the newest developments in streamline train design and construction. The color design provides for a "harbor mist" gray roof with the sides an "armour" yellow, trimmed with scarlet-red striping and lettering. Cars are constructed of aluminum alloy, with fluorescent lighting in the interior of the club and lounge cars, diner and chair cars. All cars are self-contained as to air-conditioning and lighting, with intercommunicating telephone systems and electric heat in addition to the regular steam heat. Each train is powered by three Diesel units of 2,000 hp. each, for a total of 6,000 hp.

The "City of San Francisco" will carry a coach, seating 48 passengers, a coffee shop-diner for the convenience of coach passengers, a regular diner, a club lounge car, eight sleepers and an observation lounge. The "City of Los Angeles" consists of two chair cars, a cafe lounge car for the convenience of coach passengers, a diner, eight sleepers and a club lounge car, the "Hollywood," the furnishings and decorative scheme of which are composed entirely of synthetic materials.

Bills Introduced in Congress

The Senate has agreed to Senator Wheeler's S. Res. 128, authorizing and directing the Railroad Retirement Board to make "an immediate, thorough, and complete investigation of the incidence of injuries and diseases incurred by employees through employment in the railroad industry and the social and economic consequences of such injuries and diseases, and to report to the Senate committee on interstate commerce at the earliest practicable time the results of its investigation."

The Senate interstate commerce committee's report on the resolution states that it is acceptable to the board, and the railroad labor organizations have endorsed it, while railroad management has offered no objection to it.

Chairman Lea of the House interstate and foreign commerce committee has offered in the House H. R. 5343, a bill to authorize the President to establish daylight-saving time in such areas and for such periods as he deems necessary to conserve electrical energy and promote the national defense. The bill provides that no daylight-saving time shall be established more than two hours in advance of standard time and that any orders or proclamations issued under the bill shall become inoperative six months after the termination of the unlimited national emergency proclaimed by the President in his proclamation issued on May 27.

Representative Bland, Democrat of Virginia, has introduced in the House H. J. Res. 216, which would provide that during the national emergency the provisions of section 27 of the Merchant Marine Act, 1920, as amended (prohibiting transportation of merchandise in the coastwise trade except in American vessels), shall not apply to transportation from the Territory of Alaska to the United States of strategic or critical materials originating in that territory, when, for any period during the emergency, the United States Maritime Commission determines that adequate transportation for such materials is not available in vessels admitted to the coastwise trade of the United States.

Approves New Haven Subsidiary's Grandfather Applications

Passing upon applications of the New England Transportation Company, the Interstate Commerce Commission, Division 5, has granted that New York, New Haven & Hartford subsidiary certificates covering common-carrier bus operations on some 27 routes and 10 alternate routes between various points in Massachusetts, Connecticut, Rhode Island and New York. New England had grandfather-clause rights on all but five of the routes, certificates covering the latter having been issued upon a showing of public convenience and necessity.

The decision also grants certificates for routes which have been sold by New England since the filing of the applications early in 1936. In that connection the New England Greyhound Lines, a New Haven affiliate, gets certificates for routes between New York and Providence, R. I.; between New Haven, Conn., and Willimantic; and between New York and Pittsfield, Mass. Harry Ablahadian gets a certificate for a route between Winsted, Conn., and Millerton, N. Y.; and Johnson Bus Lines, Inc., for a route between Providence, R. I., and Franklin, Mass.

Meanwhile, the commission, having found that the operations involved are common carriage, denied the alternative contract-carrier applications filed by New England. Also, it refused to accept the contention of the applicant that separate authority should be granted to continue to operate between points and over routes which are in whole or in part included in other routes. Such duplications were eliminated from the description of routes embraced in the decision. In connection with those operations which are substitutes for abandoned New Haven train service, New England sought blanket authority to provide such substitutions "in the territory served by the railroad whenever bus service is found to be more economical." But the commission limited the certificates for such operations to those in existence when the application was filed, saying that applications for future substitute services would have to be presented in the usual way.

Begin Joint Wage Negotiations

Joint negotiations on the demands of railway employees for increases in pay were begun at the Morrison Hotel, Chicago, on July 24, when conference committees of the eastern, southeastern and western railroads met with representatives of the five operating brotherhoods. On the following day these conference committees met with the chairmen of the 14 non-operating brotherhoods. The schedule of meetings calls for sessions with each group on every alternate day thereafter.

Formal demands for pay increases amounting to an overall average increase of 41 per cent in railway payrolls were served upon the railroads of the United States by the 19 railway unions on June 10, and following the refusal of individual railroads to grant pay increases, it was decided to negotiate the matter on a national basis at Chicago on July 24. The demand of the five operating unions is for a 30 per cent increase in basic pay. That of the 14 non-operating unions is for a minimum of 70 cents per hour as the lowest rate to be paid in the industry and with other corresponding increases which will provide rates up to $1.15 per hour for the highly skilled workers. The railroads were asked to make the new rates effective as of July 10, 1941.

In addition to the wage increase demands, other matters are pending. Among these are that of the locomotive engineers, made on March 18, 1939, which calls for rates of pay based on horsepower of Diesel locomotives instead of weight on drivers and for an assistant engineer in the engine rooms of certain types of Diesel locomotives; that of the 14 non-operating unions, made on May 20, 1940, which seeks vacations with pay; and that of the firemen, made on May 10, 1941, which involves higher pay on Diesel and coal-burning locomotives and a fireman-helper on each unit of locomotives.

While these matters were being considered by representatives of the railways and the unions, the Western lines on May 26 and the Eastern lines on May 27 served notice on employees in engine, train and yard service of their intent and desire to revise existing agreements governing rules and working conditions. On June 9, various proposals affecting rates of pay and rules were served upon the non-operating employees.

Following this action, the chiefs of the 14 non-operating standard railroad labor organizations, on June 23, called off the negotiations for vacations with pay. Conferences on the demands of the enginemen and on those of the firemen, which were being held at Chicago, broke up on July 3, due to the continued demands of the engineers and firemen for the employment of extra men on Diesel-electric locomotives.

Jeffers Urges Development of Western Minerals

W. M. Jeffers, president of the Union Pacific, and J. L. Haugh, vice president, were the principal witnesses at the initial hearing on July 23 before a subcommittee of the Senate public lands committee, authorized by Senate Resolution No. 53 "to make a full and complete study with respect to the development of the mineral resources (including oil and gas) of the public lands of the United States."

Mr. Jeffers told the subcommittee "that America has long overlooked the great riches of mineral resources on its public lands in the west." Instead of developing and using these resources, he continued, industry has concentrated on the eastern seaboard which has resulted in a maladjustment of labor and has caused

constant labor strife. Instead, Mr. Jeffers urged that defense plants being built from public appropriations should be located in the west and thus help, in a measure at least, to decentralize "this abnormal labor situation, and provide better working and living conditions."

Specifically, he recommended:

1. That the government locate in the west such plants as are immediately required in national defense as can be supplied from the natural resources now known to be available. These include plants for the production of aluminum, ammonia, magnesium, manganese, potash, sodium phosphates, soda ash, steel, tungsten and other basic materials; the plants to be so developed that they will be available for peacetime activities. In addition, other manufacturing plants to use these basic materials should be placed in the west to include fabricating plants, powder and TNT plants, ammunition and arms manufacturing plants, ammunition and shell loading and storage plants, aircraft factories and other factories for the manufacture of war necessities.

2. That the government provide additional appropriations for exploration, and testing in laboratories and pilot plants of valuable earths and minerals.

3. That the government provide assay offices where private explorers can take their discoveries for free analyses and assays.

Mr. Haugh described to the subcommittee in detail the various mineral deposits located in the public lands in the west. He also reminded the subcommittee that electric power is now available at "unusually low cost" in Oregon and Washington from the Bonneville-Grand Coulee projects and in Nevada and California from Boulder Dam to reduce the various ores found in the west. His specific recommendations followed along the lines of those of Mr. Jeffers.

Additional witnesses appearing before the sub-committee included B. W. Scandrett, vice-president of the Northern Pacific; J. B. Lamson, manager of commercial development for the Chicago, Burlington & Quincy; and E. O. Hemenway, land commissioner of the Atchison, Topeka & Santa Fe. Senator O'Mahoney, Democrat of Wyoming and chairman of the subcommittee said that L. W. Baldwin, chief executive officer of the Missouri Pacific, and A. O. Ridgway, chief engineer of the Denver & Rio Grande Western, were scheduled to testify later in the week. Representatives from the Geological Survey of the Interior Department and the Office of Production Management will also be heard before the hearings are closed.

Carriers Seek Postponement of Class Rate Inquiry

Charging that there is no freight-rate emergency but that there is an economic and military emergency, which "should have right of way over obsolete statistics, stale records and irrelevant testimony, which these proceedings will produce," the Class I railroads have asked the Interstate Commerce Commission to indefinitely postpone its inquiry into class rates and classifications in Docket Nos. 28300 and 28310.

The petition begins by stating that the Class I roads have not heretofore joined in a formal effort to have these proceedings abandoned or postponed, but that they now find traffic, transportation and economic conditions and national policies so changed since the entry of the orders that they are compelled to seek the indefinite postponement.

After setting out the fact that economic and transportation conditions have been vastly altered during the last two years due to the defense program and the curtailment or diversion of ocean and coastwise shipping, the carriers tell the commission that existing conditions afford no acceptable economic pattern upon which to formulate a long-time freight rate program.

Also, it is their position that in view of the present economic dislocations, upward trends in costs and general uncertainties, it is not timely to propose a system of rates which "points, primarily, at least, to definite and sweeping rate reductions, substantially nationwide in area, with all which they entail in new problems for railroad management, to say nothing of the problems which altered relationships would present for those of the shipping public who may be still shipping."

Besides telling the commission that the investigation will consume the time of hundreds of railroad employees and shippers who should be doing other more important things, the carriers also urge that the commission may exercise its administrative discretion and appropriately postpone the proceedings indefinitely. Bills offered in Congress, they say, which may have been the occasion for the investigation, were not passed, and were offered long prior to any reasonable expectation of a war in Europe, and "without any anticipation whatsoever of the conditions which now confront the country."

"Neither the railroads nor shippers," concludes the petition, "should be called upon in all the circumstances to devote themselves to what these respondents earnestly believe to be an unnecessary, and even a harmful, program."

Rules on Split Cars Stay Tough

(*Continued from page 168*)

posals would not only violate section 6 of the Act, but also section 2, which makes "special rates" unlawful, the majority goes on to say that in theory any shipper or any two shippers could thus tender two cars on one bill of lading and obtain the concession in freight rate charges offered by the carriers' proposals, "but it is plain that in practice few, if any shippers besides forwarders would be in a position to effect these paper combinations. The proposed arrangement would therefore constitute a device by which respondents would carry freight for a favored shipper or class of shippers at lower charges than they would exact from the general public for a virtually identical transportation service." As a result, the proposed "marriage rule" was ordered canceled.

The next proposal considered was the so-called "flying trapeze rule" applied in instances where stop-off arrangements were not authorized by tariff to permit a portion of a carload shipment contained in a two-car consignment to move in a separate car to an off-line or different destination than that to which the carload shipment was billed. The freight charges were constructed on the basis of the carload rate from origin to billed destination, plus the l. c. l. rate from the billed destination to the off-line point, on the portion of the freight moved directly from origin to off-line point.

The examiners had recommended approval of this rule, but the majority found that it was unlawful for the following reasons: "(1) in many cases it has the effect of applying over the line of one carrier a rate published by another carrier in which the first does not concur; (2) the total charge would often be difficult or impossible of ascertainment because of the existence of more than one rate and route from the billed destination to the intermediate or off-line point; and (3) the proposed basis of charges bears no relation to the actual services which respondents offer to perform."

A third practice was that covered by the so-called "follow-lot rule" which permitted freight for stop-off points to be loaded into separate cars regardless of whether the initial car was fully loaded. This rule was also approved by the examiners, but the majority decided that it was unlawful and ordered it canceled.

In I. & S. 4668 the carriers proposed a new rule which they called an "excess rule"; it was intended to govern the application of rates and minimum weights on shipments which are in excess of the quantity that can be loaded in cars furnished. I. & S. 4678 was concerned with the so-called "two for one rule" which governs the application of rates and minimum weights on shipments for which the railroads furnish cars at variance with the size or type of the car ordered. Both the shippers and the railroads opposed this rule which was published in compliance with a finding in the Freight Forwarding Investigation. It would require charges based on the carload minimum for the first car plus the carload rate applied to actual weight in the second car. The examiners favored the "excess rule" and recommended that the latter "two for one rule" be disapproved and the findings of the Freight Forwarding Investigation modified accordingly.

The majority disagreed with the examiners, finding that the "excess rule" and the carrier-modified "two for one rule" are unlawful and prescribing its own "two for one rule," instead. However, the commission modified its "two for one rule" and the corresponding finding in the Freight Forwarder Investigation by adding "that a lawful tariff rule to govern two-car or multiple-car shipments will be one conforming in substance to Rule 24 of the classification, namely, a rule requiring that each car except the final or follow-lot car be loaded as heavily as loading conditions permit and charged for at not less than the carload minimum weight, and which would then permit charges to be assessed on the remainder of the shipment loaded in the follow-lot car at the

carload rate without observance of the carload minimum weight."

However, the majority decided to defer the effect of this ruling on carload shipments of sheet iron culvert pipe and electric water heaters until the carriers have established reduced minimum weight for these articles, graduated for cars of different lengths or capacities.

Commissioner Porter felt that the action of the majority was a "vain attempt to stop *all* split origins and split destinations of whatever nature on multiple-car shipments." After commenting that various statements of the majority condemning the assailed practices of the carriers did not meet reality, Commissioner Porter went on to declare that they "will not stop split origins or split destinations, and in fact it is doubtful if the majority action here will have the slightest effect upon this present practice. All it will do is require the follow-lot car to continue to move, as it does not, all the way to the origin or to the destination of the lead car, instead of over more direct and more economical routes. . . . As a consequence, respondents will be required to continue to haul such cars over hundreds of miles of needless and wasteful transportation, and their release by the shippers will continue to be delayed because of the longer haul in some instances as much as three or four days; and all this in a time of national emergency and a threatened car shortage when the utmost is demanded in efficient and economical transportation and in the prompt release of equipment."

Retirement Board Pays Out $430,000,000

Benefits amounting to more than $430,000,000 were certified by the Railway Retirement Board in the five-year period ending June 30, 1941, according to a statement made this week. In the fiscal year 1940-41, benefits totaled $121,799,776, 6.8 per cent more than in the preceding fiscal year, while an estimated $6,000,000 will be added to the total retirement obligations of the Board, as of June 30, 1941, when all applications for annuities to begin before that date are certified.

By June 30, 1941, 144,697 employees had received annuities under the Railroad Retirement Act. In addition, 48,536 former carrier pensioners, 1,613 survivor annuitants, 4,290 death benefit annuitants, 1,341 recipients of both survivor and death benefit annuities, and 42,514 lump-sum death beneficiaries had received benefits under the act.

Employee annuity payments certified during the fiscal year 1941 totaled $94,305,364, or 11.6 per cent more than in the preceding year. The total number of annuities in force increased from 106,078 at the beginning of the fiscal year to 118,533 annuities at the end of the fiscal year. The average employee annuity in force as of June 30, 1941, was $65.70.

Pensions in force June 30, 1941, numbered 31,080 with an average payment of $58.91; survivor annuities numbered 2,771 with an average payment of $32.50; and death benefit annuities came to 710 with an average of $35.97. Lump-sum death benefits certified in the fiscal year 1941 numbered 13,172, and the average benefit was $218.64.

The balance in the railrod retirement account at the end of the fiscal year was $76,803,438, consisting of $74,000,000 invested in special 3 per cent Treasury notes and $2,803,438 in cash. When accrued obligations of about $6,000,000 on benefits are taken into account along with $37,000,000 in accrued taxes as of June 30, 1941, and the slight excess of transfers from the Treasury over tax collections, the estimated assets of the retirement system as of the end of the fiscal year amounted to $104,500,000.

Collections under the Carriers Taxing Act during 1940-41 totaled $136,942,076, or 13.2 per cent more than the amount collected in the preceding year. This increase in collections it is said, is due both to the higher tax rate applicable in the fiscal year 1940-41 (3 per cent compared with 2¾ per cent), and to the continued improvement in railroad employment.

Administrative expenses for the retirement system totaled $2,913,782 for 1940-41. This was 2.4 per cent of benefit payments as against 2.5 per cent for the preceding benefit year.

Wheat Storage Space Practically Filled

The storage of large quantities of wheat on the farms, whether the growers want to or not, seems to be the only solution to the present acute situation. Carry-over government loan wheat of the 1939-40 crops fills the storage space throughout the country and despite frantic efforts of the Commodity Credit Corporation, no relief is in sight. The flow of wheat into Kansas City has stopped to a mere trickle following the Board of Trade's order of July 9 that no more storage wheat could be accepted there and the action on the part of the railways declining to accept wheat for storage at Kansas City unless the shipper can prove that space is available there. In the last few days the total shipments into Kansas City have averaged only about 300 cars daily, and most of this has been "free" wheat, for sale and not for storage under loan.

The sub-terminals are in somewhat similar condition. The same rule applicable to Kansas City has been made effective at Salina, Kan., St. Louis, Mo., and Cincinnati, Ohio. Several of the other subterminals are considering similar action.

Meanwhile, the storage situation at points all over the country is getting worse. With the most complete set-up for wheat-handling ever attempted and with every factor of wheat transportation in perfect control, the railways are nevertheless blocked from performing their function of transportation by the nation-wide lack of storage space.

Chicago is one of the latest "sore spots" to develop. The recent shipment of 3½ million bushels of storage wheat from the elevators there to the east might have had some good effect, but the C. C. C. immediately ordered 5,000,000 bushels of corn shipped from steel bin storage in Iowa to fill the vacant space.

At a meeting of the grain storage committee in Chicago last week a warning was issued to wheat shippers not to load cars for shipment to Chicago until they had determined that storage space was available. A total of 1,165 cars of wheat were received in Chicago on July 21 and more than 650 were on track awaiting unloading, while the elevator facilities at Chicago can only take care of approximately 300 cars daily.

It is estimated that the amount of elevator space in Chicago available for the storage of grain under the government loan program totals around 37,000,000 bu. and that of this, more than 25,000,000 bu. of space is filled with grain. Of the remaining 12,000,000 bu. of storage space, possibly 1,500,000 bu. of space is under contract, probably another 1,000,000 bu. of space is reserved for the Commodity Credit Corporation and 3,700,000 bu. of space is required for operation. It was estimated on July 22 that 4,000,000 bu. of grain were awaiting unloading.

Federal grain authorities, on July 21, blamed middle western warehousemen, especially those in Chicago, Minneapolis, Kansas City and Omaha, for the impasse which has occurred in the government grain program because the Commodity Credit Corporation, on the one hand, must draw in corn from storage points to market areas for sale to Britain while domestic users, on the other hand, must shunt both stored wheat and corn from one place to another to make room for incoming wheat crops. Over-optimistic statements a year ago by these warehousemen who promised space for 128,000,000 bushels of grain, but who could provide only half that amount when the demand came, is one of the principal causes of the situation, according to A. F. Troyer, acting director of the grain division of the Commodity Credit Corporation.

Storage on farms seems to be the primary solution, and Illinois farm groups have urged government grain officers to refuse to make 1941 loans except where the grain is to be stored on the farm. Difficulty in securing steel bins because of defense priority for steel is complicating the storage problem.

Cole Pipe Line Bill Goes to President

The Senate and House conferees reached an agreement on the Cole pipe line bill this week, and the measure has gone to the President for his approval. Almost immediately upon the completion of Congressional action on the bill, Petroleum Coordinator for National Defense Harold L. Ickes recommended the immediate construction by the oil industry of a $70,000,000 pipe line system that would carry 250,000 barrels of crude oil daily to the East coast.

As passed by both the House and Senate the bill, H. R. 4816, gives broad powers both to government agencies and to private companies to condemn private land for the construction of oil and gasoline pipe lines. In the Senate the bill was amended to provide that all pipe lines which are built during the emergency would become subject to the Interstate Commerce Act and the Elkins Act after June 30, 1943. The conferees deleted this amendment after the House had refused to go along

with it. The House-approved bill had not contained such an amendment, and debate on the floor of the Senate revealed that Mr. Ickes was opposed to it because of the fact that he felt the oil companies would refuse to invest any private capital in pipe lines if, after the emergency, they were to become subject to anti-trust laws and the rebate provisions of the Elkins Act.

Later in the Senate and House Senator Stewart, Democrat of Tennessee, and Representative Cole, Democrat of Maryland and author of the measure, told their respective bodies that after a conference held this week between Mr. Ickes and representatives of the Interstate Commerce Commission, the commission had agreed to the elimination of the Senate amendment which it had previously advocated. This action was taken, Mr. Ickes pointed out in a letter to Senator Stewart and Representative Cole, after it was agreed that the policy of the Petroleum Coordinator "will be to consult with the commission with regard to relief from the Interstate Commerce Act and its amendments and supplements before any proclamation providing for such relief is recommended to the President." The letter went on to say that the purpose of the meeting between Mr. Ickes and the commission was to make certain that the persons affected by such a proclamation will conform as fully as possible to the regulations of the commission and that the purposes which make necessary the granting of relief therefrom are understood by and agreeable to the commission.

After the conference report had been agreed to in the House, Mr. Cole told his colleagues that "there is no thought of setting up a dual system of pipe lines in which one group will be subject to Interstate Commerce Commission regulation and the other free therefrom. The purpose is to restrict the exemptions and the period in which the exemptions will apply to the minimum which will be necessary to assure immediate pipe line construction and to provide thereafter that the line or lines then will revert to the status of ordinary pipe lines subject to regulation by the Interstate Commerce Commission. It is recognized that sound governmental procedure requires that the facilities of interstate commerce and the use thereof should be regulated in normal times by a single agency such as the Interstate Commerce Commission."

Besides the advocacy of the crude pipe line, Mr. Ickes also recommended that the oil industry undertake at once an augmented tanker building program that would seek the construction of "40 to 50 large high-speed vessels" in addition to the 139 now under construction or contract by the Maritime Commission and by various private companies.

The pipe line system recommended by the Coordinator would originate in the East Texas oil fields and proceed as a 20-inch line to a point in Illinois, east of St. Louis, and probably in the general neighborhood of Nashville, Ill. This 20-inch line would have a daily capacity of 200,000 barrels. At its Illinois terminal the 20-inch line from Texas would connect with a 16-inch line originating at Wood River, Ill., where other lines from the mid-continent and Texas fields now terminate. The proposed 16-inch line would have a maximum capacity of 115,000 barrels daily.

From the junction of the two lines a 24-inch crude oil line with a daily capacity of 250,000 barrels would be constructed to the Atlantic Coast, terminating in the Philadelphia and New York refining areas.

Although the combined daily capacity of the 20-inch line from Texas and of the 16-inch line from Wood River totals 315,000 barrels, the capacity of the 24-inch line after the junction is made will be 250,000 barrels. This excess capacity of the two feeder lines, it was pointed out, is intended so as to obtain a greater flexibility in procuring crude oil for transportation on to the East coast. It is estimated that if all conditions for its construction are ideal, it will take a minimum of eight months for the construction of the line.

Mr. Ickes also said that further consideration should immediately be given by the industry to the question of constructing a petroleum products lines from the Gulf to the Atlantic Seaboard. He also informed the oil industry that he is prepared to recommend priorities in steel and machinery for both the crude line project and the tanker construction.

Among the oil companies expected to unite in the joint construction of the line are: Socony-Vacuum Oil Company, Cities Service Co., Standard Oil Company of New Jersey, Atlantic Refining Co., Tide Water Associated Oil Company, Shell Oil Company, Gulf Oil Company, Texas Oil Company, and the Consolidated Oil Company.

Limits of Philadelphia Harbor

Division 4 of the Interstate Commerce Commission has made a determination of the limits of Philadelphia harbor and the harbors contiguous thereto for the purpose of administering that provision of the Transportation Act of 1940 which exempts from regulation water carriers operating wholly within a harbor or contiguous harbors, when such operations are a part "of a continuous through movement under common control, management, or arrangement to or from a place outside" such harbor.

The commission's order, dated July 14, has an appendix showing a map of the area involved; it has been served on interested parties, and will become effective 30 days from its date "unless good cause is shown for further proceedings herein." The case is docketed as Ex Parte No. 145.

St. Lawrence Hearings Adjourn for a Week

Hearings on the St. Lawrence seaway and power project were adjourned on July 18 until July 24 so that the House rivers and harbors committee could go to Canada to inspect the locations of the dams and power houses. Testimony subsequent to that reported last week was given mainly by opponents of the project. Represented in the list of witnesses were men from the port of New York, Richmond, New Orleans, the Governor of Oklahoma and the secretary-treasurer of the United Mine Workers of America.

Included in the list of opposition witnesses were S. Palmer Gaillard, Jr., of Mobile, Ala., attorney for the Alabama State Dock Commission, representing also the Mobile Chamber of Commerce and the City of Mobile, who also read a statement of opposition by Governor Frank M. Dixon of Alabama; F. W. Parker, general manager of the Galveston Wharves, representing the Texas Port Association; Francis S. Walker, representing the American Merchant Marine Institute; James W. Danahy, vice-president and managing director of the West Side Association of Commerce of New York City; George H. McCaffrey of the Merchants' Association of New York; Cornelius H. Callaghan, manager of the Maritime Association of the Port of New York; J. K. Hiltner, chairman of the legislative committee of the Atlantic States Shippers Advisory Board, representing also the Commercial Traffic Managers of Philadelphia; Merwin K. Hart, president of the New York State Economic Council; Governor Leon C. Phillips of Oklahoma; Walter Parker, directing economist of the Interior Bureau of Economics at New Orleans, representing New Orleans' city-wide committee in opposition to the St. Lawrence treaty; Baldwin Wood, chief engineer of the New Orleans Water Department; H. E. Ketner, commerce counsel for the Virginia State Corporation Commission; and Thomas Kennedy, secretary-treasurer of the United Mine Workers of America. All of these witnesses opposed the project, while only one witness, Louis J. Taber, master of the National Grange, advocated its adoption.

Mr. Taber said his organization supported the development "on the broadest ground of public benefit," while Governor Phillips labeled it "a boondoggling experiment which would be a burden on us the longest day we live." "The propect," declared Governor Phillips, "will further centralize industrial development in the already congested areas, and may possibly destroy the opportunity for honest employment by railroad men, coal miners, maritime workers and many other forms of employment used in production of transportation."

Mr. Wood told the committee that canalization of the St. Lawrence and the internationalization of Lake Michigan would jeopardize the health of all the cities and communities obtaining their water supply from the Illinois and the lower Mississippi rivers.

The anthracite coal industry, in the opinion of Mr. Kennedy, would be dealt a severe blow by the construction of the project. During his testimony Mr. Kennedy declared that the undertaking would mean the end of the industry's Canadian business because of the fact that with the completion of the project "foreign coals would come right into our own back yard and undersell our American project."

Meanwhile, Representative Van Zandt, Republican of Pennsylvania, has inserted in the appendix of the Congressional Record of July 21 a reply to certain statements made last week by Chairman Mans-

field of the House rivers and harbors committee, details of which were given in last week's issue. In that statement Mr. Mansfield chided Mr. Van Zandt for saying that the St. Lawrence would have to be defended at a tremendous cost to the taxpayers of this country, and pointed out that there were many other large projects in the country which would also have to be defended. In answer, Mr. Van Zandt cites for Mr. Mansfield the "great cost" which has been incurred in defending the Panama Canal, and urges that the St. Lawrence would also have to be defended at an equally large cost to this country.

Equipment and Supplies

LOCOMOTIVES

Southern System Buys 22 Diesel-Electric Switching Locos.

Southern Railway System Companies have placed orders for a total of 22 Diesel-electric switching locomotives as follows:

SOUTHERN RAILWAY COMPANY
2 1000-hp., Electro-Motive Corporation
1* 1,000-hp., Baldwin Locomotive Works
1* 660-hp., Baldwin Locomotive Works
1 660-hp., American Locomotive Company

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC
7 1,000-hp., Electro-Motive Corporation
3 1,000-hp., American Locomotive Company
2 660-hp., American Locomotive Company

ALABAMA GREAT SOUTHERN
3 660-hp., American Locomotive Company

NEW ORLEANS TERMINAL
2 1,000-hp., Electro-Motive Corporation

* Previously reported in the *Railway Age* of July 19.

THE UNION RAILROAD has on order four 1,000-hp. Diesel-electric locomotives with the Baldwin Locomotive Works.

THE UNITED STATES WAR DEPARTMENT is inquiring for from six to eight steam locomotives of the 2-8-0 type.

THE RICHMOND, FREDERICKSBURG & POTOMAC is inquiring for six steam locomotives of the 4-8-4 type.

THE PATAPSCO & BACK RIVERS has ordered two Diesel-electric locomotives, including one of 1,000-hp. and one of 660-hp., from the Baldwin Locomotive Works.

THE MYSORE IRON & STEEL WORKS of India has ordered one 2-8-2 type steam locomotive from the Baldwin Locomotive Works.

THE CENTRAL OF GEORGIA has ordered two Diesel-electric switching locomotives comprising one of 1,000-hp. and one of 600-hp. from the Electro-Motive Corporation.

THE CHILEAN STATE RAILWAYS have ordered seven 68-ton electric switching locomotives for October, 1942, delivery from the Westinghouse Electric & Manufacturing Co.

THE NORFOLK & WESTERN has placed an order for ten Mallet locomotives of the 2-8-8-2 type with the company's own shops. These are in addition to six locomotives of the same class ordered in March and reported in the *Railway Age* of March 29. The company is now working on five Class J passenger locomotives of the 4-8-4 type, ordered in December, 1940, which it expects to complete between now and late 1941 or early 1942. The 16 Mallet engines will be turned out at the rate of about one per month thereafter.

FREIGHT CARS

Mo. Pac. to Buy 2,850 Cars

The Missouri Pacific has been authorized by the District court to purchase 2,850 freight cars as follows:

FOR MISSOURI PACIFIC
750 50-ton, 40½-ft. box cars
250 50-ton, 50½-ft. box cars
500 70-ton hoppers
50 70-ton drop end coal cars
50 50-ton flat cars

FOR MISSOURI-ILLINOIS
100 50-ton box cars
50 50-ton low side flat bottom coal cars
50 55-ton covered hoppers

FOR GULF COAST LINES
250 50-ton box cars
400 50-ton low side flat bottom coal cars
50 50-ton flat cars

FOR INTERNATIONAL-GREAT NORTHERN
100 50-ton box cars
200 50-ton Low Side Flat Bottom Coal Cars
50 50-ton flat cars

THE AKRON, CANTON & YOUNGSTOWN has ordered 15 covered hopper cars of 70 tons' capacity from the American Car & Foundry Co.

THE CHICAGO & NORTH WESTERN has placed an order for 700 40-ft. 6-in. steel-sheathed box cars of 50 tons' capacity with the American Car & Foundry Co.

THE MISSOURI & ARKANSAS has ordered 100 40-ft. 6-in. steel-sheathed wood-lined box cars of 50 tons' capacity from the American Car & Foundry Co.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered five steel covered hopper cars of 70 tons' capacity from the American Car & Foundry Co.

THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC has ordered two depressed center flat cars of 90 tons' capacity from the company's own shops at Chattanooga, Tenn.

THE UNITED STATES WAR DEPARTMENT has ordered 68 ammunition cars of 40 tons' capacity from the St. Louis Car Co. The inquiry for these cars was reported in the *Railway Age* of June 21.

THE UNITED STATES NAVY is asking for bids for from one to ten flat cars of 50 tons' capacity and from one to six box cars of 50 tons' capacity for Sewall's Point, Va.—schedule 7908.

THE FRUIT GROWERS' EXPRESS COMPANY is expected to place an order for 900 refrigerator cars with the company's own shops at Indiana Harbor, Ind., and is reported to be contemplating the building of 500 to 600 additional cars.

THE CHICAGO, BURLINGTON & QUINCY has deferred construction of 350 freight cars for the Colorado & Southern and 1,300 cars for the Ft. Worth & Denver City, the orders for which were reported in the February 1 and June 14 issues of the *Railway Age*.

THE UNITED STATES ARMY has ordered sixteen 50-ton flat cars from the Haffner-Thrall Car Company under requisitions E-19615 and E-20046. The cars are to be divided equally among Ft. Wingate, N. M., Ordnance, Ore., Atlas, Ohio, and Anniston, Ala.

THE SOUTH AFRICAN RAILWAYS & HARBOURS has placed an order for 1,000 high-side open-top gondola cars with the Canadian Car & Foundry Co. These are in addition to the 1,000 cars previously ordered from this company in May as reported in the *Railway Age* of May 10.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 250 low-side drop-end gondola cars of 50 tons' capacity from the Greenville Steel Car Company and 100 50-ft. 6-in. all-steel automobile cars of 50 tons' capacity from the Ralston Steel Car Company. The inquiry for this equipment was reported in the *Railway Age* of July 12.

THE MISSOURI-KANSAS-TEXAS 2,000-car rehabilitation program, reported in the *Railway Age* of July 19, has been supplemented with a program calling for the rebuilding of an additional 500 box cars, the repair of 200 coal cars, the construction of 60 caboose cars and the rebuilding of 52 company fuel oil tank cars.

IRON AND STEEL

THE READING has placed an order for 200 tons of 100-lb. rail with the Bethlehem Steel Company.

THE NEW YORK, NEW HAVEN & HARTFORD has petitioned the federal court for permission to buy 20,000 tons of steel rail to be used in its 1942 improvement program. The cost of the rail was set at $1,861,000.

SIGNALING

THE NEW YORK, NEW HAVEN & HARTFORD has placed an order for materials required for the re-signaling of the 6½ mi. of the company's main four-track electrified line between Stamford and Greenwich, Conn., with the Union Switch & Signal Co. The project involves the complete renewal of the automatic signal system and re-spacing of the signals for longer braking distances. The existing semaphore signals controlled by centrifugal frequency relay track circuits are being replaced by searchlight signals, governed by coded a. c. track circuit equipment. The project also includes the replacement of the existing electro-mechanical drawbridge interlocking at Cos Cob, Conn., by a new all-relay electric plant, involving 12 electric switch movements for bridge locks and derails. The engineering and construction work involved is being carried out by the railroad's own forces.

MOTOR VEHICLES

THE UNITED STATES NAVY has ordered forty-three 41-passenger motor coaches from the a. c. f. Motors Corporation.

Supply Trade

Stewart McNaughton has been appointed general sales manager of the Locomotive Division of the **Baldwin Locomotive Works,** in charge of all steam and Diesel locomotive sales.

Sidney D. Williams, formerly vice-president in charge of steel sales for the **Copperweld Steel Company,** has been appointed executive vice-president in charge of that company's Warren, Ohio, division.

E. J. Kunsman, formerly with the Southern Pacific at Houston, Tex., has been appointed sales engineer for the **Holland Company,** with headquarters at Chicago.

Eugene Roth has been appointed district sales manager for the **Vascoloy-Ramet Corporation,** with headquarters at the company's newly opened district sales engineering office at 50 Church St., New York.

C. W. Pearsall has been appointed general sales manager of the **Ahlberg Bearing Company** of Chicago. Mr. Pearsall joined that company in 1919 and has been successively a salesman in Chicago and Philadelphia, Pa.; then Philadelphia branch manager; Chicago branch manager and manager of distributor sales.

Pearce Whetstone, sales representative for the **Safety Car Heating & Lighting Co., Inc.,** at Philadelphia, Pa., has been transferred to the San Francisco, Cal., office where he will serve in the same capacity. **Howard W. Keyser,** who has been in the electrical operation department, will succeed Mr. Whetstone as sales representative at Philadelphia.

The National Battery Company is increasing production facilities at its plants located in Dallas, Tex.; Atlanta, Ga.; North Bergen, N. J.; Chicago Heights, Ill.; and Depew, N. Y. The company recently abandoned its Kansas City, Kan., plant and opened a modern factory with greatly increased production at Leavenworth, Kan. With the enlarged output thus available, the company will have a productive capacity to manufacture over 4,500,000 units annually.

Frederick A. Stevenson, whose election as senior vice-president of the **American Car & Foundry Co.** was reported in the *Railway Age* of July 19, has served his entire business career with that company. Beginning as an apprentice at its Detroit, Mich., plant he soon was transferred, as master mechanic, to the plant at Berwick, Pa. Later he returned to Detroit as assistant general manager, and upon the abolition of the office of general manager, became assistant to William C. Dickerman, now president of the American Locomotive Company, but then vice-president in charge of operations of the American Car & Foundry Co. During World War I, the American Car & Foundry Co. was, as it now is again, one of the country's largest producers of munitions, while still carrying on its regular business as maker of railroad equipment and supplies—and during that war Mr. Stevenson was in immediate charge of all

Frederick A. Stevenson

of the company's manufacturing operations at its plants at Detroit, Mich., and Buffalo and Depew, N. Y. Later he became first assistant vice-president and then vice-president in charge of operations, with headquarters at the company's general office in New York, and his work in that capacity—particularly in organizing the resources demanded by the present national emergency—has been recognized by his recent election as senior vice-president. In his present capacity he is responsible for the conduct of the company's large and varied manufacturing activities, not only as a builder of railroad equipment but also as an important contributing factor in the program for preparedness in the national defense. Mr. Stevenson has been a member of the company's board of directors since 1929.

OBITUARY

Edward H. Dickinson, assistant to the vice-president of sales of the American Locomotive Company, whose death July 9 was reported in the *Railway Age* of July

Edward H. Dickinson

12, began his career in 1884 as a messenger boy in the freight office of the Lake Shore & Michigan (now New York Central). He was appointed billing clerk in 1887 and promoted to cashier in 1890. Mr. Dickinson left this railway in 1895 to enter the employ of the Brooks Locomotive Works at Dunkirk, N. Y., as assistant estimator, continuing in this capacity after that company was absorbed by the American Locomotive Company in 1901. In 1905 he was transferred to the New York office, where he served as chief clerk of the sales department until his appointment as assistant to the vice-president of sales, which position he held until his death. Mr. Dickinson was 71 years of age.

Construction

BOSTON & MAINE.—This company has awarded a contract for alterations to the passenger station at Ayer, Mass., at estimated costs of $26,000, to the Tredennick-Billings Company of Boston, Mass.

DENVER & RIO GRANDE WESTERN.—Contracts totaling approximately $47,450 have been awarded for the construction of a commissary building, yard service building, battery house, etc., at Burnham, Colo. The main contract amounting to $43,700, was awarded the Walter H. Harris Company.

DENVER & RIO GRANDE WESTERN.—A contract amounting to $44,000 has been awarded the W. E. Ryberg Company for the construction of a station and office building at Salida, Colo. This company has also been awarded a contract amounting to $21,461 for remodeling the Union station at Salt Lake City, Utah.

DENVER & RIO GRANDE WESTERN.—This road plans to construct a water storage and treating plant at Thistle, Utah, which will cost approximately $23,000, 40-ft. by 194-ft. extension to its distribution dock at Denever, Colo., which will cost about $23,500, and the construction of inspection pits for streamlined Diesel-powered trains at two important terminals at an estimated cost of $54,000. It is also planned to convert 25 miles of narrow-gage railroad to standard gage at a cost of about $25,000.

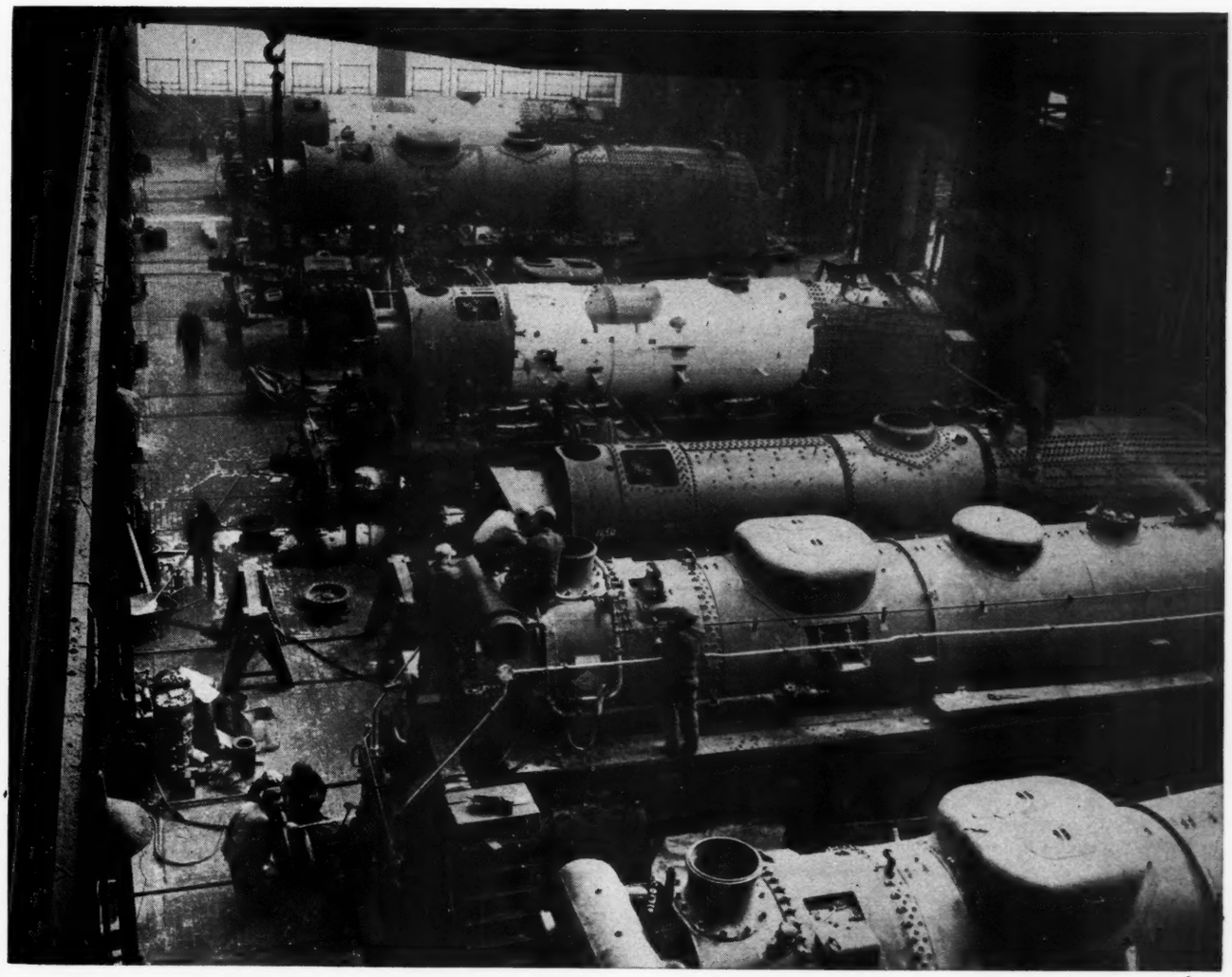
ELGIN, JOLIET & EASTERN.—A contract has been awarded the Ross & White Co., Chicago, for a "Red Devil" locomotive engine coaler to be installed at Rossville, Ill.

KANSAS CITY SOUTHERN.—A contract has been awarded the Ross & White Co., Chicago, for a "Red Devil" locomotive engine coaler to be installed at DeQueen, Ark.

PENNSYLVANIA. — The Pennsylvania Public Utility Commission has approved plans calling for the construction of an addition to a bridge carrying the main tracks of this company's Pittsburgh division over Race street in the Borough of Edgewood so as to provide a passenger station platform thereon; the abolition of an overhead pedestrian crossing where a pedestrian foot bridge passes above and over the main tracks at Lincoln avenue; and the relocation of a crossing at grade where

Continued on next left-hand page

You can't build locomotives in 30 days!



The time to consider new locomotives is not when the emergency is in full force, but far enough in advance to assure delivery when needed.

LIMA LOCOMOTIVE WORKS, LIMA LOCOMOTIVE WORKS INCORPORATED INCORPORATED, LIMA, OHIO

a private sidetrack leading from one of the main tracks crosses at grade Edgewood avenue and the two tracks of the Pittsburgh Railways Company. The changes are made necessary by the proposal of the Borough of Edgewood to widen and improve Edgewood avenue, using therefore certain parcels of land owned by the Borough and presently used by the railroad and thereby necessitating the railroad to relocate a portion of its westbound passenger platform at the Edgewood station and the industrial side track. Total cost of the improvement is estimated at $16,594, of which $10,144, representing the cost of the new station platform and removal of the overhead pedestrian foot bridge, will be borne by the railroad company.

LAKE TERMINAL RAILROAD.—A contract has been awarded the Ross & White Co., Chicago, for the installation of a reinforced concrete sand drying plant and a "Red Devil" engine coaler at Lorain, Ohio.

LEHIGH VALLEY.—A contract has been awarded the Ross & White Co., Chicago, for a "Red Devil" locomotive engine coaler to be installed at East Buffalo, N. Y.

MISSOURI PACIFIC HOSPITAL.—A contract has been awarded to the Keithly Construction Company, St. Louis, Mo., for alterations and improvements to the Missouri Pacific Hospital in St. Louis, to cost $8,000.

NEW YORK, NEW HAVEN & HARTFORD.—This company has awarded contracts to F. S. Jones of Newport, R. I., for the construction of new freight facilities at Newport, at estimated cost of $75,000, and to the Foskett & Bishop Co. of New Haven, Conn., for the construction of fueling facilities for Diesel-electric locomotives at New Haven at estimated cost of $21,000.

NEW YORK, NEW HAVEN & HARTFORD.—Wet sand handling equipment for steam driers at the Cedar Hill engine house at New Haven, Conn., has been purchased from the Ross & White Co., Chicago.

UNION PACIFIC.—Approximately $130,000 will be spent for terminal improvements at Council Bluffs, Iowa, consisting of the construction of a new all-steel terminal office building, 30 ft. by 324 ft., to replace an old freight transfer depot, the construction of a 19-ft. by 100-ft. covered freight platform of steel and concrete construction, the construction of 1,675 ft. of additional trackage in the freight car repair yard, the relocation of 1,400 ft. of trackage to provide for more efficient operation and the construction of 14,000 square yards of paving between tracks to facilitate and speed up the handling of freight at this point. The new office building will have sidewalls of Truscon Ferro-Clad structural paneling, steel sash windows and composition roofing on a steel deck. It will provide an assembly room, men's and women's washrooms, a locker room, a record room, a conductor's room and offices for the terminal trainmaster, master mechanic, yardmaster and clerks.

Financial

ATLANTIC COAST LINE-LOUISVILLE & NASHVILLE.—*Equipment Trust Certificates of the Clinchfield.*—These roads have asked the Interstate Commerce Commission for authority to assume liability for $1,720,000 of equipment trust certificates of the Clinchfield, maturing in 10 equal annual installments of $172,000 on August 15 in each of the years from 1942 to 1951, inclusive. The proceeds will be used as part of the purchase price of new equipment costing a total of $1,917,195 and consisting of eight steam, 4-6-6-4 freight locomotives; five all-steel, 34 ft. 3 in., covered hopper cars of 70 tons capacity; and seven all-steel, 29 ft. 2 in., eight-wheel caboose cars.

BOSTON & MAINE.—*Abandonment.*—This company would be permitted to abandon (1) the portion of its Newburyport branch extending northerly from Topsfield, Mass., through Georgetown, to Newburyport, 15.5 miles; and (2) the portion of its Georgetown branch extending northwesterly from Georgetown, Mass., through Groveland, to Paper Mill, 4.5 miles, if Division 4 of the Interstate Commerce Commission adopts a proposed report of its Examiner J. S. Prichard.

CINCINNATI UNION TERMINAL.—*Railroad Depreciation Accounting.*—The United States Board of Tax Appeals has sustained the action of the Commissioner of Internal Revenue in denying this company deductions from gross income for depreciation on buildings where its books and its reports to the Interstate Commerce Commission do not reflect such depreciation. The company had claimed that it should be allowed to deduct depreciation on its buildings from its gross income in computing its federal income and excess profits taxes. The board found that the company had never shown such depreciation either in its own books, its reports to its constituent companies, or in its reports to the commission, and was therefore, not entitled to such a deduction.

CLINCHFIELD.—*Equipment trust certificates.*—This road awarded, on July 22, a $1,720,000 issue of equipment trust certificates to Halsey, Stuart & Co. and associates on a bid of 100.1259 for 1¾s, representing an interest cost to the carrier of about 1.73. The certificates, which mature August 15, 1942, to 1951, inclusive, were immediately re-offered publicly at prices to yield 0.35 to 2 per cent, according to maturity.

GULF & SABINE RIVER.—*Deficit Status.*—Division 4 of the Interstate Commerce Commission has found that this company earned a net railway operating income in excess of 5¾ per cent per year on the value of its property and is not entitled to reimbursement under the provisions of section 204 of the Transportation Act of 1920, as amended January 7, 1941, for any losses suffered during the period of federal control. Division 4 found that the period of private operation was 20 months and six days, which would entitle the company to earn income at the rate of 9.68 per cent for the period, whereas it earned at the rate of 12.07 per cent. An order was entered dismissing the carrier's claim.

HARTFORD EASTERN.—*Deficit Status.*—Division 4 of the Interstate Commerce Commission has found that the amount payable to this company under the provisions of section 204 of the Transportation Act of 1920, as amended, is $776, from which no amount is deductible as due to the President, as operator of transportation systems under federal control, on account of traffic balances or other indebtedness. The entire line of this company was abandoned under authority of an I. C. C. certificate dated April 22, 1933.

ILLINOIS CENTRAL.—*Equipment Trust Certificates.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to assume liability for $6,920,000 of two per cent equipment trust certificates, maturing in 20 equal semi-annual installments of $346,000 on March 1 and September 1, beginning September 1, 1941, and ending March 1, 1951. The issue has been sold at 98.7579 to Halsey, Stuart & Co., Inc., and associates, making the average annual cost to the company approximately 2.26 per cent.

KANSAS CITY SOUTHERN.—*Abandonment by the Texarkana & Fort Smith.*—The Kansas City Southern and the Texarkana & Fort Smith have asked the Interstate Commerce Commission for authority to abandon a line extending from Bear Creek Junction, Ark., to Horatio, 5.7 miles.

KANSAS CITY SOUTHERN.—*Purchase.*—This company has asked the Interstate Commerce Commission for authority to purchase a part of the property of the Louisiana & Arkansas in Shreveport, La., which has been used in the past as a passenger station by the L. & A. and the St. Louis Southwestern, but which is now being used as an office building. The K. C. S. also seeks authority to acquire perpetual trackage rights over the line of the L. & A. leading into the station. It is proposed that the K. C. S. will pay its subsidiary, the L. & A., $226,329 in cash for the station and $2,500 for trackage rights.

LEHIGH VALLEY.—*Acquisition and Control of the State Line & Sullivan.*—This company has asked the Interstate Commerce Commission for authority to acquire and control the State Line & Sullivan by purchase of all but not less than 75 per cent of the latter's outstanding capital stock. The petition informs the commission that the Lehigh Valley has operated the line under lease for a considerable period of time but that it has become impossible to agree on the amount to be paid for rental. As a result, this company has offered to purchase some 18,632 shares of stock for $150,000, or at the rate of approximately $8 a share.

MISSOURI PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has issued a corrected report in Finance Docket No. 12205, wherein it authorized this com-

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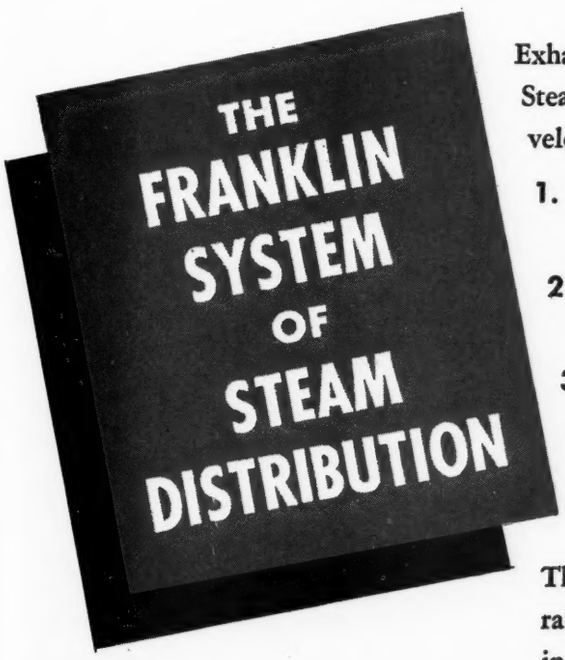
Mean Effective Pressure *determines* Locomotive Performance

In a paper issued by the Office of Mechanical Engineer of the A. A. R. in February, 1939, covering A. A. R. Passenger Locomotive Tests in October, 1938, the following statement appears:

"... Nothing developed in the tests to indicate that any of the locomotives had reached the limit of boiler capacity. Therefore, the question of sustained power at high speeds becomes a question of mean effective pressure in the cylinders ..."



Exhaustive tests have demonstrated that the Franklin System of Steam Distribution makes it possible for a locomotive to develop the maximum mean effective pressure. It provides:

1. Separation of valve events, so that admission, cut-off, release and compression are independently controlled.
2. Larger inlet and exhaust passages and improved steam flow.
3. Reduced cylinder clearance volume.
4. Increased mechanical efficiency, obtained by reduced weight of moving masses, reduced friction and elimination of carbonization.

The Franklin System of Steam Distribution is offered to the railroads of the United States to meet the objective outlined in the A. A. R. report.

FRANKLIN RAILWAY SUPPLY COMPANY, INC. NEW YORK CHICAGO

In Canada: FRANKLIN RAILWAY SUPPLY COMPANY, LIMITED, MONTREAL

pany to abandon a branch line extending from LeRoy, Kans., to Madison, 29.5 miles. The corrected report shows that Commissioner Rogers also dissented and that Commissioner Aitchison did not participate in the disposition of the case. A summary of the decision was given in the *Railway Age* of June 28, page 1207.

NEVADA TRANSPORTATION. — *Deficit Status.*—Division 4 of the Interstate Commerce Commission has found that this company did not sustain a decrease in its net railway operating income while under private operation in the Federal control period and is not entitled to the benefits of section 204 of the Transportation Act of 1920, as amended January 7, 1941.

OREGON ELECTRIC.—*Trackage Rights.*—This company has asked the Interstate Commerce Commission for authority to operate over a line of the Southern Pacific between Beaverton, Oreg., and Greenburg, 3.5 miles. Authority is also sought to retain the excess earnings from the extension, if any should arise.

ROSCOE, SNYDER & PACIFIC.—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon a line extending from Snyder, Tex., to Fluvanna, 17.8 miles.

SOUTHERN. — *Acquisition.* — This company has asked the Interstate Commerce Commission for authority to acquire the properties of three of its wholly-owned subsidiaries, the Asheville & Craggy Mountain, the Asheville Southern, and the Georgia Midland.

SOUTHERN PACIFIC. — *Abandonment by the Pacific Electric.*—The Pacific Electric has asked the Interstate Commerce Commission for authority to abandon 1.6 miles of track in Pasadena, Calif.; 3,883 ft. in New Delhi, Calif., and 0.85 mile in Torrance, Calif. The trackage involved is a part of the company's interurban electric railway line.

Average Prices of Stocks and Bonds

	July 22	Last week	Last year
Average price of 20 representative railway stocks..	30.65	30.37	27.91
Average price of 20 representative railway bonds..	65.80	65.61	57.69

Dividends Declared

Erie & Kalamazoo.—Irregular, $2.50, payable August 1 to holders of record July 26.

Louisville & Nashville.—Irregular, $3.25, payable August 7 to holders of record July 28.

Michigan Central.—$25.00, semi-annually, payable July 31 to holders of record July 21.

Wheeling & Lake Erie.—5½ Per Cent Conv. Preferred, $1.38, quarterly; 4 Per Cent Prior Lien, $1.00, quarterly, both payable August 1 to holders of record July 26.

Operating Revenues and Operating Expenses of Class I Steam Railways

Compiled from 133 Monthly Reports of Revenues and Expenses Representing 137 Class I Steam Railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF MAY, 1941 AND 1940

Item	United States		Eastern District		Southern District		Western District	
	1941	1940	1941	1940	1941	1940	1941	1940
Miles of road operated at close of month	232,220	232,863	57,235	57,375	44,190	44,342	130,795	131,146
Revenues:								
Freight	$370,903,109	$284,657,461	$161,672,603	$119,805,014	$73,180,158	$59,430,057	$136,050,348	$105,422,390
Passenger	37,492,809	29,741,537	19,989,561	16,601,382	5,881,069	3,809,790	11,622,179	9,330,365
Mail	9,085,878	8,356,449	3,362,862	3,193,057	1,543,407	1,422,133	4,179,609	3,741,259
Express	6,404,050	5,633,224	2,496,843	2,392,303	1,408,007	1,172,270	2,499,200	2,068,651
All other operating revenues	18,400,030	15,105,978	9,046,185	7,416,341	2,111,185	1,835,326	7,242,660	5,854,311
Railway operating revenues	442,285,876	343,494,649	196,568,054	149,408,097	84,123,826	67,669,576	161,593,996	126,416,976
Expenses:								
Maintenance of way and structures	51,640,349	44,187,205	20,105,055	16,319,084	8,598,073	7,897,541	22,937,221	19,970,580
Maintenance of equipment	80,997,206	65,423,840	38,160,402	28,018,781	14,756,515	13,644,988	28,080,289	23,760,071
Traffic	9,465,832	9,387,211	3,360,826	3,395,739	1,784,777	1,728,564	4,320,229	4,262,908
Transportation—Rail line	139,876,407	119,659,499	64,928,640	54,615,334	23,753,703	20,729,981	51,194,064	44,314,184
Transportation—Water line	420,762	605,471	.....	.....	.....	.....	420,762	605,471
Miscellaneous operations	3,497,636	2,968,998	1,559,381	1,349,984	478,024	368,921	1,460,231	1,250,093
General	11,052,925	11,013,151	4,340,267	4,425,688	2,142,546	2,089,490	4,570,112	4,497,973
Transportation for investment—Cr.	360,642	390,459	69,615	40,646	61,268	75,393	229,759	274,420
Railway operating expenses	296,590,475	252,854,916	132,384,956	108,083,964	51,452,370	46,384,092	112,753,149	98,386,860
Net revenue from railway operations	145,695,401	90,639,733	64,183,098	41,324,133	32,671,456	21,285,484	48,840,847	28,030,116
Railway tax accruals	45,784,421	32,602,550	20,295,150	13,922,102	10,879,082	7,392,414	14,610,139	11,288,034
Railway operating income	99,910,980	58,037,183	43,887,948	27,402,031	21,792,374	13,893,070	34,230,658	16,742,082
Equipment rents—Dr. balance	8,420,985	7,784,553	3,966,953	3,616,560	680,748	615,720	3,773,284	3,552,273
Joint facility rent—Dr. balance	2,859,965	2,844,394	1,527,293	1,556,866	346,082	301,723	986,590	985,805
Net railway operating income	88,630,030	47,408,236	38,393,702	22,228,605	20,765,544	12,975,627	29,470,784	12,204,004
Ratio of expenses to revenues (per cent)	67.1	73.6	67.3	72.3	61.2	68.5	69.8	77.8
Depreciation included in operating expenses	18,049,393	17,161,808	7,935,332	7,483,450	3,624,580	3,460,606	6,489,481	6,217,752
Pay roll taxes	10,965,497	9,556,274	4,869,695	4,106,504	1,898,558	1,723,955	4,197,244	3,725,815
All other taxes	34,818,924	23,046,276	15,425,455	9,815,598	8,980,524	5,668,459	10,412,945	7,562,219

FOR FIVE MONTHS ENDED WITH MAY, 1941 AND 1940

Item								
Miles of road operated at close of month*	232,322	233,001	57,250	57,392	44,209	44,355	130,863	131,254
Revenues:								
Freight	$1,628,492,386	$1,357,454,882	$713,118,714	$582,836,163	$324,604,737	$287,013,629	$590,768,935	$487,605,090
Passenger	192,540,829	160,983,186	98,874,260	87,189,154	36,261,104	27,338,749	57,405,465	46,455,283
Mail	43,162,369	40,801,669	16,081,192	15,599,627	7,516,539	7,089,144	19,564,638	18,112,898
Express	24,547,788	22,654,387	9,494,332	8,868,604	5,621,151	5,192,261	9,432,305	8,593,522
All other operating revenues	80,657,724	69,533,386	40,133,642	34,462,654	10,522,546	9,349,642	30,001,536	25,721,090
Railway operating revenues	1,969,401,096	1,651,427,510	877,702,140	728,956,202	384,526,077	335,983,425	707,172,879	586,487,883
Expenses:								
Maintenance of way and structures	211,152,873	187,404,692	84,719,152	72,274,784	39,904,968	37,065,561	86,528,753	78,064,347
Maintenance of equipment	379,913,334	331,322,859	176,803,327	147,319,348	71,210,460	66,577,315	131,899,547	117,426,196
Traffic	45,348,944	44,843,331	16,010,807	16,026,420	8,996,397	8,742,965	20,341,740	20,073,946
Transportation—Rail line	669,195,249	610,176,347	310,919,081	280,962,250	115,065,000	107,222,352	243,211,168	221,991,745
Transportation—Water line	2,616,144	2,686,366	.....	.....	.....	.....	2,616,144	2,686,366
Miscellaneous operations	17,493,715	15,756,404	7,614,755	6,933,325	2,939,742	2,645,869	6,939,218	6,177,210
General	54,924,909	54,571,344	21,708,919	21,686,247	10,764,273	10,508,082	22,451,717	22,377,015
Transportation for investment—Cr.	1,228,704	1,418,367	191,646	265,403	291,538	290,960	745,520	862,004
Railway operating expenses	1,379,416,464	1,245,342,976	617,584,395	544,936,971	248,589,302	232,471,184	513,242,767	467,934,821
Net revenue from railway operations	589,984,632	406,084,534	260,117,745	184,019,231	135,936,775	103,512,241	193,930,112	118,553,052
Railway tax accruals	193,609,754	154,845,177	84,256,432	65,231,250	46,428,789	34,960,784	62,924,533	54,653,143
Railway operating income	396,374,878	251,239,357	175,861,313	118,787,981	89,507,986	68,551,457	131,005,579	63,899,919
Equipment rents—Dr. balance	39,865,189	40,434,083	19,526,059	19,114,066	2,313,946	2,686,365	18,025,184	18,633,652
Joint facility rent—Dr. balance	13,807,560	13,372,947	7,531,794	7,414,800	1,498,123	1,230,823	4,777,643	4,727,324
Net railway operating income	342,702,129	197,432,327	148,803,460	92,259,115	85,695,917	64,634,269	108,202,752	40,538,943
Ratio of expenses to revenues (per cent)	70.0	75.4	70.4	74.8	64.6	69.2	72.6	79.8
Depreciation included in operating expenses	89,080,037	84,925,929	39,071,537	36,843,912	18,001,470	17,188,128	32,007,030	30,893,889
Pay roll taxes	51,315,840	46,896,490	22,846,346	20,637,950	9,086,760	8,612,511	19,382,734	17,646,029
All other taxes	142,293,914	107,948,687	61,410,086	44,593,300	37,342,029	26,348,273	43,541,799	37,007,114

* Represents an average of the mileage reported at the close of each month within the period.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

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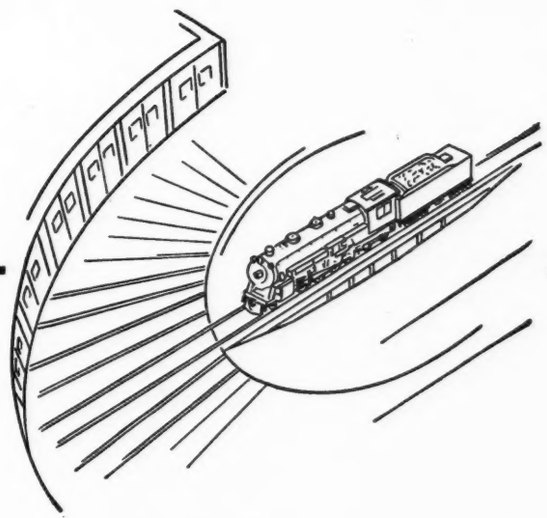
SPECIAL BRICK

SHAPES

...are a nuisance



The initial standardization of Arch Brick shapes and sizes and Arch tube spacing was the work of the American Arch Company.

It is a work that goes forward constantly and saves the Stores and Mechanical Departments a vast amount of trouble.

The easiest solution to many a locomotive Arch engineering difficulty would be to use a special brick shape. But this the American Arch Company is willing to do only as a last resort. Over 50 % of all Arch Brick is covered by 6 separate patterns.

The insistence of American Arch Company on adhering to standards has simplified the work of the Storekeeper and Maintenance Man. It is only one of the many ways in which American Arch Company is serving the railroads.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED
60 EAST 42nd STREET, NEW YORK, N. Y.

Locomotive Combustion Specialists

Railway Officers

FINANCIAL, LEGAL AND ACCOUNTING

D. B. Ohrum has been appointed assistant secretary of the Texas & Pacific, with headquarters at Dallas, Tex.

EXECUTIVE

L. C. Walters, signal and electrical superintendent of the Southern, with headquarters at Cincinnati, Ohio, has been appointed assistant to vice-president, signal and electrical, with headquarters at Washington, D. C., succeeding **W. J. Eck,** who is retiring on August 1 after 34 years of service.

Paul W. Johnston, whose promotion to assistant vice-president on the Erie, with headquarters at Cleveland, Ohio, was reported in the *Railway Age* of July 19, was born at Transfer, Pa., on July 5, 1892 and attended Allegheny College, Meadville, Pa. He entered the service of the Erie on July 1, 1909, serving as a clerk and agent at various points during vacation from school. In 1918, he was appointed station supervisor at Meadville and in the following year he was advanced to rules examiner, with the same headquarters. In 1920, Mr. Johnston was further promoted to supervisor of station service, with headquarters at Hornell, N. Y. In the following year he was appointed trainmaster at Elmira, N. Y., and in 1922, he was transferred to Hornell, being appointed chief clerk to the superintendent at Meadville in 1923. Four years later Mr. Johnston again became a train master and after two years in this capacity he was promoted to assistant superintendent of transportation. In 1933 he was further advanced to superintendent of transportation, with headquarters at Cleveland, and in 1936, he was appointed assistant general manager of the Western district with headquarters at Youngstown, Ohio. Mr. Johnston was appointed assistant to the vice-president at Cleveland in February, 1938, and in November, 1939, was advanced to general manager of the Eastern district, with headquarters at Jersey City, N. J., which position he held until his recent promotion.

Paul W. Johnston

OPERATING

E. E. Breese has been appointed assistant to the general manager of the Tennessee Central, a newly created position, with headquarters at Nashville, Tenn.

G. E. Skillicorn has been appointed terminal supervisor on the Southern Pacific, with headquarters at San Francisco, Cal.

C. L. Finch, trainmaster of the Ashley, Drew & Northern, has been promoted to trainmaster and assistant superintendent, with headquarters as before at Crossett, Ark.

V. D. Matthews has been appointed superintendent of transportation of the Midland Valley, the Kansas, Oklahoma & Gulf and the Oklahoma City-Ada-Atoka, with headquarters at Muskogee, Okla.

P. Bryant, chief train dispatcher on the Minneapolis, St. Paul & Sault Ste. Marie at Shoreham, (Minneapolis), Minn., has been promoted to trainmaster at Enderlin, N. D., succeeding **G. H. Nolan,** resigned.

Effective August 1, **Charles L. Simpson,** superintendent of the Stevens Point division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Stevens Point, Wis., will be promoted to general superintendent with headquarters at Minneapolis, Minn., succeeding **James R. Branley,** resigned.

L. E. Phillips, yardmaster of the Philadelphia division of the Pennsylvania, has been appointed assistant trainmaster of the Williamsport (Pa.) division. **M. Mausteller,** assistant trainmaster, Washington, D. C., has been transferred to the Philadelphia division. **W. W. Dorwart,** yardmaster of the Philadelphia division, has been appointed assistant trainmaster of the Maryland division at Washington.

M. L. Smith has been appointed trainmaster of the Little Rock subdivision of the Missouri Pacific from Little Rock, Ark., to Gurdon and of the Hot Springs and Benton subdivisions, with headquarters at Little Rock, Ark., and **H. D. Masters** has been appointed trainmaster of the Little Rock subdivision from Gurdon to Texarkana, Ark., and of the Nashville, Norman and Delight subdivisions, with the same headquarters. **B. S. Greer,** acting trainmaster, has been assigned to other duties.

James W. Corbett, whose promotion to superintendent of the Portland division of the Southern Pacific, with headquarters at Portland, Ore., was reported in the *Railway Age* of July 5, was born at Gallup, N. M., on June 25, 1895, and entered railway service in May, 1911, as a call boy on the Oregon-Washington Railroad & Navigation Company (now part of the Union Pacific) at La Grande, Ore. In May, 1912, he became a telegraph operator and served at various points on the O.-W. R. & N. until August 1, 1915, when he went with the Southern Pacific as telegraph operator at Portland, later serving as telegraph operator and agent at various points on the Shasta division. From May, 1917, to January, 1919, he served in the U. S. Army signal corps and air service, returning to the Southern Pacific on the latter date as a telegraph operator on the Sacramento division. Five months later, Mr. Corbett was promoted to train dispatcher at Sacramento, Cal., later serving also as division rules examiner, and in June, 1927, he was advanced to supervisor of transportation in the assistant general manager's office at Sacramento. In April, 1928, he was appointed assistant superintendent of the Southern Pacific Motor Transportation Company (motor transport subsidiary) at Salem, Ore., and three months later, he was appointed trainmaster on the Southern Pacific at Tucumcari, N. M., later being transferred successively to Alturas, Cal., San Luis Obispo, and Watsonville Junction. Mr. Corbett was promoted to assistant superintendent at Portland on September 15, 1937, and on July 1, 1939, he was appointed assistant to the general manager at San Francisco, Cal., which position he held until his recent promotion.

James W. Corbett

James J. Swift, trainmaster of the Wyoming division of the Lehigh Valley, with headquarters at Kingston, Pa., has been promoted to superintendent of the New York division with headquarters at Jersey City, N. J., succeeding **Ray L. Gebhardt,** whose appointment as executive assistant of the New York, Ontario & Western at New York was reported in the *Railway Age* of June 28. **Henry O. Wood,** assistant trainmaster at Easton, Pa., has been promoted to trainmaster at Kingston, succeeding Mr. Swift. **Samuel Garrigues,** transportation inspector at Bethlehem, Pa., has been promoted to assistant trainmaster at Easton, succeeding Mr. Wood.

Mr. Swift was born in Dunmore, Pa., and entered railroad service with the Delaware, Lackawanna & Western at Scranton, Pa., in the offices of the superintendent of car service. In 1917 he went with the Lehigh Valley as traveling car agent at Jersey City, then serving successively as chief clerk to superintendent of transportation at Bethlehem and assistant train-

Continued on next left-hand page

Reduced
Fuel and Water Consumption Per Unit of Work Done

Locomotives equipped with small flue superheaters have shown this advantage to a high degree, as compared with other types and designs.

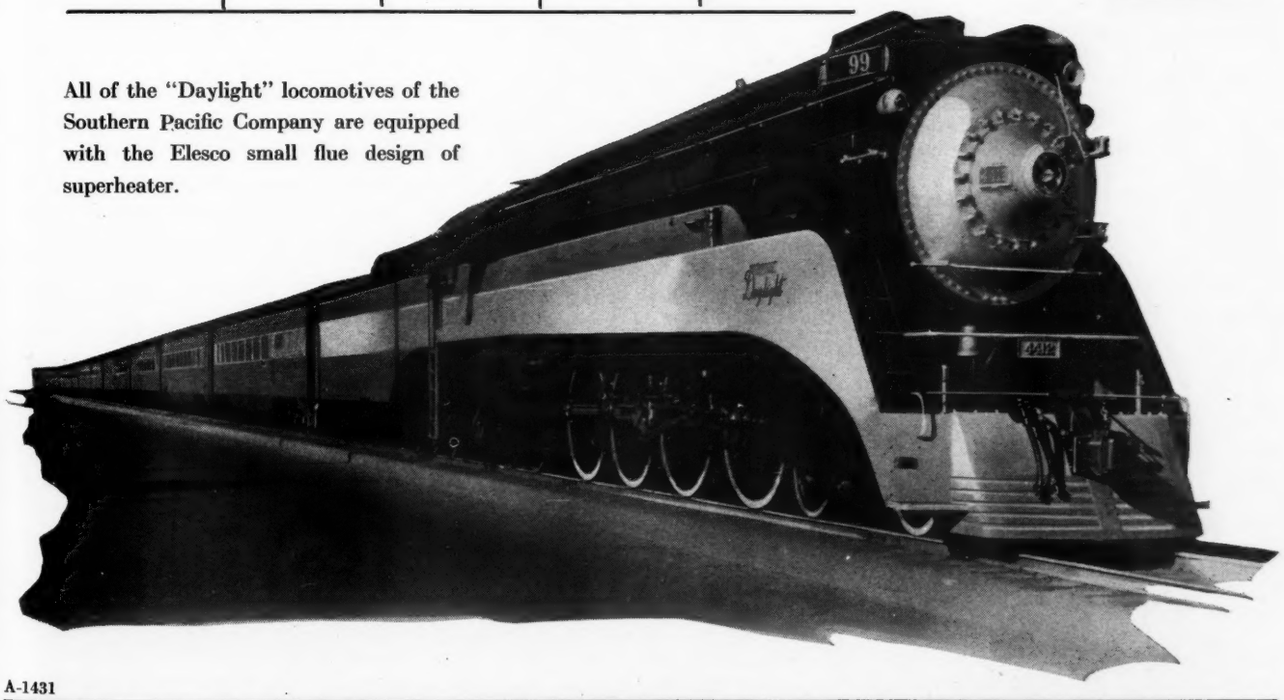
On a test plant in the United States, a locomotive underwent two comparative tests, first equipped with a large flue superheater and second with a small flue superheater. Except for the difference in superheaters, the locomotive was identical in each instance. The economies resulting from this test, which are disclosed in the accompanying table, are typical of the results that are being obtained from similar tests.

COAL CONSUMPTION PER IHP

Output IHP	Large Flue Superheater	Small Flue Superheater	Reduction in Pounds	Saving in Per Cent
2000	2.85	2.25	0.6	21.0
3000	3.50	2.75	0.75	21.5
3500	4.25	3.25	1.0	23.5

ELESCO

All of the "Daylight" locomotives of the Southern Pacific Company are equipped with the Elesco small flue design of superheater.



A-1431

SUPERHEATERS • FEEDWATER HEATERS
AMERICAN THROTTLES • STEAM DRYERS
EXHAUST STEAM INJECTORS • PYROMETERS

THE SUPERHEATER COMPANY

Representative of
AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street • NEW YORK
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Montreal, Canada
THE SUPERHEATER COMPANY, LTD.

master at Jersey City. When the New York division was created in October, 1939, Mr. Swift was promoted to trainmaster of that division at Jersey City, later transferring to Sayre, Pa., and Kingston, successively.

M. L. Jennings, whose promotion to superintendent of the San Joaquin division of the Southern Pacific, with headquarters at Bakersfield, Cal., was reported in the *Railway Age* of July 5, entered railway service in 1906 as a student yardman on the Southern Pacific at Rocklin, Cal., later being transferred to Roseville, Cal., when the yard was moved to that point. In 1909 he was promoted to engine foreman and a year later he was advanced to yardmaster, working in both the Roseville and Sacramento (Cal.) yards. In 1919 Mr. Jennings was promoted to general yardmaster and a year later he was advanced to trainmaster in the Sacramento Valley territory. In 1924 he was transferred to the Sierra Nevada mountain territory and in 1936 he was advanced to assistant superintendent at Dunsmuir, Cal. Mr. Jennings was promoted to assistant to the general manager, with headquarters at San Francisco, Cal., in July, 1940, which position he held until his recent promotion.

Henry H. Garrigues, whose appointment as assistant to the general manager of the Eastern region of the Pennsylvania at Philadelphia, Pa., was reported in the *Railway Age* of June 21, was born on September 4, 1881, at Harrisburg, Pa. Mr. Garrigues was educated at Haverford School and Haverford College and entered the service of the Pennsylvania on February 18, 1901, on the Belvidere division at Lambertville, N. J. On March 21, 1903, he was transferred to the Philadelphia division as a rodman and on September 2 of the same year he went to Altoona, Pa., as a transitman. He was assistant supervisor at Altoona, Pitcairn, Pa., and Perryville, Md., from January, 1904, to December 1, 1908. He then served as supervisor on the Allegheny, Atlantic, Philadelphia and Baltimore divisions, later in

Henry H. Garrigues

the valuation department and general manager's office. From December, 1917, to March, 1920, Mr. Garrigues was division engineer on the Trenton and Philadelphia Terminal divisions and from March to May, 1920, he was engineer maintenance of way. From May, 1920, to January, 1926, he served successively as superintendent of the Delaware, Atlantic, Philadelphia Terminal and Cleveland and Pittsburgh divisions and as general superintendent at Chicago. In January, 1926, he became general superintendent of the Eastern Pennsylvania division at Harrisburg, being transferred to the Central Pennsylvania division at Williamsport, Pa., on July 1, 1933. He was appointed chief engineer maintenance of way of the Eastern region at Philadelphia on May 1, 1939, serving in this capacity until October, 1940, when he was granted a leave of absence because of illness.

David Clarence Gibbs, whose promotion to superintendent of the Northern division of the Kansas City Southern, with headquarters at Pittsburg, Kan., was reported in the *Railway Age* of July 12, was born at Flag Branch, Tenn., on May 7, 1885, and entered K. C. S. service as a

David Clarence Gibbs

train dispatcher at Shreveport, La., on March 19, 1912. In December, 1918, he was promoted to chief dispatcher and in July, 1922, he was advanced to trainmaster, which position he held until his recent promotion, which was effective July 1.

TRAFFIC

R. A. Ross has been appointed general agent at Akron, Ohio, for the Akron, Canton & Youngstown and the Northern Ohio.

R. J. Hurst has been appointed assistant general freight agent on the Elgin, Joliet & Eastern, with headquarters at Chicago, a newly-created position.

Frank S. Swaney has been appointed general agent for the Pittsburgh & West Virginia at St. Louis, Mo., succeeding **A. K. Anderson.**

Donald A. MacKinnon, traffic agent for the Chicago Great Western at San Francisco, Cal., has been promoted to general agent at that point, succeeding **J. A. Walden,** deceased.

Paul F. Echele, whose promotion to general freight agent on the Union Pacific, with headquarters at Omaha, Neb., was announced in the *Railway Age* of July 19, was born at Machens, Mo., on June 22, 1892, and attended business college at St. Louis, Mo. He entered railway service on September 1, 1910, in the freight claim department of the Mobile

Paul F. Echele

& Ohio at St. Louis, and in April, 1911, he went with the Illinois Central in the traffic department at St. Louis, a short time later going with the Missouri Pacific traffic department at that point. In May, 1915, he was transferred to Chicago, and in March, 1916, to St. Louis. Mr. Echele left railroad service in June, 1918, to become a member of the sales department of the Standard Oil Company of California at San Francisco, Cal., and in April, 1919, he re-entered railway service in the traffic department of the Southwestern region of the U. S. Railroad Administration at St. Louis. In October, 1919, he went with the Union Pacific as secretary to the vice-president-traffic, with headquarters at Omaha, and in October, 1923, he was appointed office manager of the office of the vice-president-traffic and of the general freight department at Omaha. Mr. Echele was appointed general agent, freight department, at Omaha in May, 1939, and on March 15, 1940, he was advanced to assistant to vice-president-traffic, which position he held until his recent promotion.

C. M. Black, assistant to general traffic manager of the Pittsburgh & West Virginia, has been appointed general agent, with headquarters as before at Pittsburgh, Pa.

Cecil L. Gibbs, assistant to the traffic manager of the Birmingham Southern, has been promoted to assistant traffic manager, a change of title, with headquarters as before at Birmingham, Ala.

Arthur L. MacKenzie has been appointed general agent, passenger department, for the New York Central at San Francisco, Cal., succeeding **Sidney W. Bone,** who has been promoted to division passenger agent at Chicago, relieving **O. W. Crapser,** who has retired.

Effective August 1, the office of L. B. Burford, assistant vice-president in charge of rates and divisions of the Erie, also the headquarters of freight traffic department with jurisdiction over rates, divisions and tariffs will be located in the Hudson Terminal building, 50 Church street, New

York. The following officers have been transferred from Cleveland, Ohio, to New York: **L. B. Burford,** assistant vice-president; **O. M. Meyne,** assistant freight traffic manager; **E. N. Hambly,** general freight agent; **F. M. Klitz,** assistant general freight agent; **C. E. Courter,** assistant general freight agent; **W. P. Van Iderstine,** chief of tariff bureau; and **J. H. Sisco,** chief of division bureau.

W. H. Trice, general traffic agent for the Norfolk Southern at Birmingham, Ala., and Memphis, Tenn., has also been appointed general traffic agent at Atlanta, Ga. **H. G. Reeves,** assistant general traffic agent at Raleigh, N. C., has been transferred to Birmingham, Ala.

Paul Briant, traveling freight agent, New York Central, with headquarters at Jacksonville, Fla., has been promoted to general agent, freight department, with the same headquarters, succeeding **William E. Carberry,** whose death on May 6 was reported in the *Railway Age* of May 17.

C. T. Hunt, assistant general passenger agent on the Southern at Atlanta, Ga., has been promoted to assistant passenger traffic manager, with headquarters at Washington, D. C., a newly created position. **James Freeman,** assistant general passenger agent at Chattanooga, Tenn., has been advanced to general passenger agent, with the same headquarters.

R. N. Golden, assistant freight traffic manager, solicitation, of the Minneapolis, St. Paul & Sault Ste. Marie, has been promoted to assistant general traffic manager, a newly-created position, with headquarters as before at Minneapolis, Minn., and **Ernest F. Rice,** general freight agent, has been promoted to freight traffic manager, also a newly-created position, with headquarters as before at Minneapolis. **Willis P. Tuller,** assistant general freight agent at Minneapolis, has been advanced to general freight agent at that point, succeeding Mr. Rice, and **E. A. Olson,** district freight agent at Duluth,

R. N. Golden

Minn., has been promoted to assistant general freight agent at Minneapolis, replacing Mr. Tuller. **H. E. Benson,** district freight agent at St. Paul, Minn., and **E. J. Murphy,** general agent at Minneapolis, have also been advanced to assistant general freight agents at Minneapolis.

Mr. Golden was born at Diamond Lake, Ill., on June 21, 1878, and entered railway service in 1896 with the Chicago & North Western, with which road he was connected until 1914. In that year he entered the employ of the Minneapolis & St. Louis, where he remained for four years. In January, 1918, Mr. Golden went with the United States Railroad Administration, and from March to September of the same year he served with the United States Shipping Board. At the end of this period he became connected with the United States Army Reserve Depot at Columbus, Ohio, and in 1919 he became western manager of the Continental Shipping Company. From 1920 to 1928, Mr. Golden held the positions of assistant general freight agent and general freight agent of the M. & St. L., leaving this company in the latter year to go with the Soo Line as general freight agent at Minneapolis. In January, 1938, he was promoted to assistant freight traffic manager in charge

Ernest F. Rice

of solicitation, which position he held until his recent promotion.

Mr. Rice was born at Minneapolis on September 27, 1882, and entered railway service in the fall of 1901 with the Great Northern, leaving this company in the following year to go with the Soo Line, where he served successively as a clerk in the freight claim department, as a clerk in the freight auditor's office, as a rate clerk and as a tariff clerk. In 1918, he was assigned to the St. Paul District Freight Traffic committee, United States Railroad Administration, returning to the Soo Line as chief clerk in the general freight department in 1919. In the following year Mr. Rice was made chief of the tariff bureau and in 1923 he was further advanced to assistant general freight agent. In February, 1936, he was promoted to general freight agent, the position he held until his recent promotion.

ENGINEERING AND SIGNALING

Samuel R. Hursh, whose appointment as chief engineer, maintenance of way of the Eastern region of the Pennsylvania at Philadelphia, Pa., was reported in the *Railway Age* of June 21, was born at Mifflinburg, Union County, Pa., on March 20, 1894, and was graduated from Pennsylvania State College, receiving the degree of bachelor of science in civil engineering in 1916. Mr. Hursh entered railroad service on June 24, 1916, as chainman

Samuel R. Hursh

on the Philadelphia Terminal division of the Pennsylvania and served as rodman on the Tyrone division from January to May, 1917, when he was furloughed for military service. From January to June, 1919, Mr. Hursh was assistant supervisor of the Maryland division of the Pennsylvania, then serving in that capacity in the general office at Philadelphia, on the Delaware division, the Williamsport division, the Baltimore division, and the Maryland division, successively. On October 9, 1926, Mr. Hursh became supervisor of the West Jersey & Seashore (now Pennsylvania-Reading Seashore Lines) and on October 1, 1927, he was appointed supervisor of the Philadelphia Terminal division of the Pennsylvania. On November 10, 1928, he became division engineer of the Atlantic division and the West Jersey & Seashore, being transferred to the Philadelphia Terminal division on December 16, 1929, and to the Pittsburgh division on July 1, 1933. On October 1, 1934, Mr. Hursh was appointed superintendent of the Wilkes-Barre division, being transferred to the Maryland division on April 1, 1935. On July 16, 1938, he became engineer maintenance of way of the Eastern Pennsylvania division, being appointed acting chief engineer, maintenance of way, of the Eastern region in October, 1940, the position he held until his recent appointment as chief engineer, maintenance of way.

A. C. Clarke, assistant chief engineer of the Baltimore & Ohio, with headquarters at Pittsburgh, Pa., has been appointed chief engineer, with headquarters at Baltimore, Md., succeeding **H. A. Lane,** deceased. Mr. Clarke was born at Granton, Ont., Canada, on May 16, 1888, and attended grade schools in Cleveland, Ohio; Toronto, Ont.; and Elkhart, Ind. He was graduated from Purdue University with the degree of bachelor of science in civil engineering. Mr. Clarke entered railroad service with the Lake Shore & Michigan Southern (now New York Central) at

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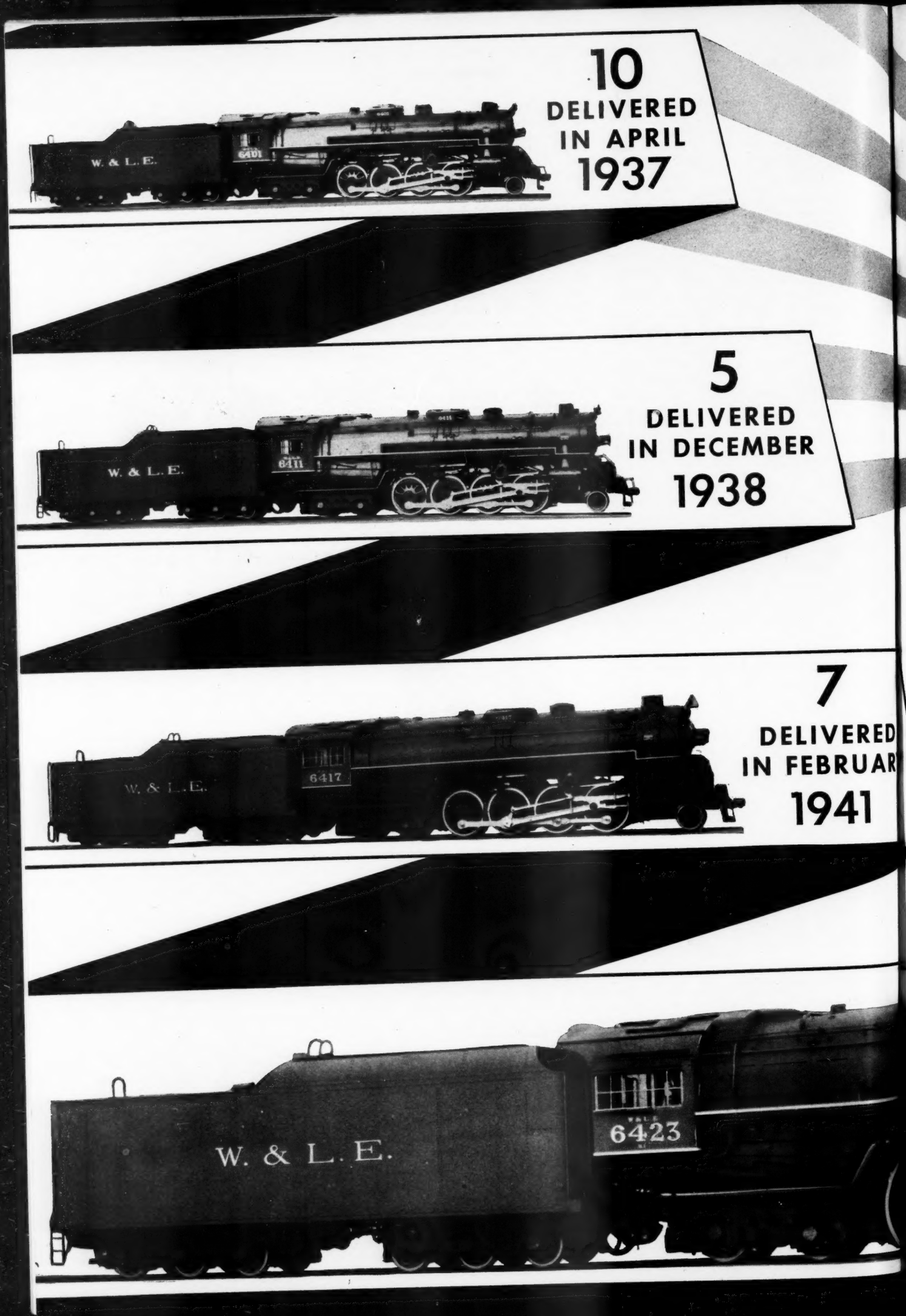

10
DELIVERED
IN APRIL
1937
W. & L. E.
6401
5
DELIVERED
IN DECEMBER
1938
W. & L. E.
6411
7
DELIVERED
IN FEBRUAR
1941
W. & L. E.
6417
W. & L. E.
6423

32 Modern Locomotives

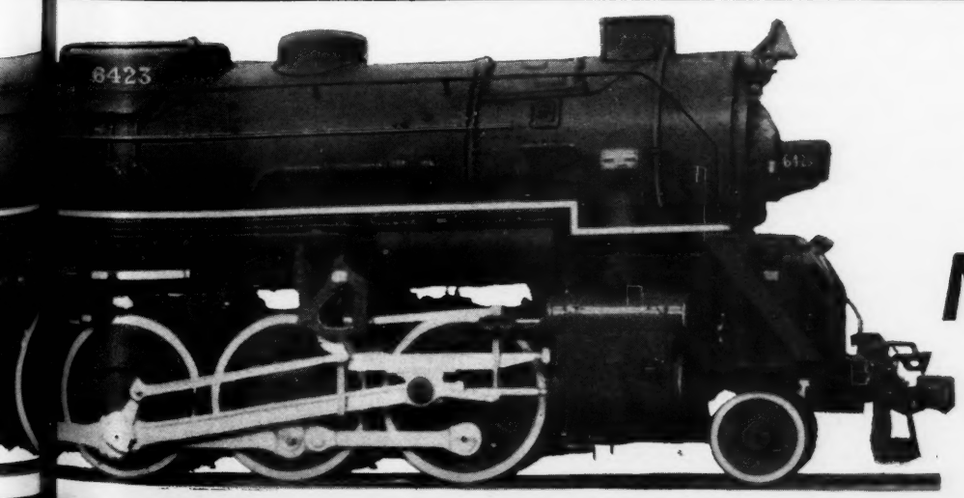
for the

WHEELING AND LAKE ERIE

With modern freight power, the Wheeling and Lake Erie is transporting speedily and efficiently the vital sinews of defense; coal, steel and ore which are hauled in large quantities over its lines . . . In 1937 the railroad placed in service the first ten of these new 2-8-4 Alco locomotives. They performed so satisfactorily that three repeat orders were placed in rapid succession; five additional went into service late in 1938, seven more early in 1941 and ten more are just ahead . . . More evidence of how modern freight power keeps trains moving expeditiously and at minimum expense.

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET NEW YORK, N. Y.



10 MORE ON ORDER

South Bend, Ind. and Elkhart, and after serving in various capacities with that road he left railroading to become a Canadian Customs Officer at Regina, Sask., in 1907. Mr. Clarke was connected

A. C. Clarke

with the Canadian Government survey and retracement in the Province of Saskatchewan in 1908, and his next position was chief of the bureau of information and statistics, under the jurisdiction of the agricultural department of that province. He was also assistant engineer on base line and exploration work in northern Saskatchewan, and in 1911 was in charge of field work for one of the large engineering companies of western Canada, at Regina. His next engineering job was devising a cost system for the department of street commissioner of Winnipeg, Man., for keeping records of repair and other work. On July 1, 1915, Mr. Clarke went with the Baltimore & Ohio in the operating department conducting investigations and preparing special reports on operating and industrial projects. He was transferred to the commercial development department in July, 1916, and in May, 1917, he was appointed assistant engineer of surveys. He was promoted to district engineer at Pittsburgh on November 1, 1918, and on October 1, 1930, was advanced to assistant chief engineer.

Orville W. Stephens, track supervisor on the Delaware & Hudson, with headquarters at Oneonta, N. Y., has been promoted to assistant engineer of structures, with headquarters at Albany, N. Y.

C. W. Dod, assistant signal supervisor of the Radford division of the Norfolk & Western, has been appointed signal supervisor of that division, with headquarters at Roanoke, Va., succeeding **Marshall L. Harris,** who retired on June 16.

L. J. Overman, roadmaster on the Union Pacific at Salina, Kan., has been promoted to general roadmaster, with headquarters at Kansas City, Mo., succeeding **M. T. Dearden,** who has been appointed roadmaster at Green River, Wyo.

H. A. Hudson, assistant engineer signal and electrical department of the Southern, with headquarters at Washington, D. C., has been appointed signal and electrical superintendent at Cincinnati, Ohio, succeeding **L. C. Walters,** whose appointment as assistant to vice-president, signal and electrical, is noted elsewhere in these columns.

MECHANICAL

F. C. Johnson, general locomotive foreman on the Canadian Pacific, has been promoted to division master mechanic at Calgary, Alta.

J. B. Halliday, master mechanic of the Pere Marquette at St. Thomas, Ont., has been transferred to Grand Rapids, Mich., to succeed **W. G. Griffith,** deceased, and has been succeeded by **E. Woodruff.**

Earl Fisher, general foreman on the Denver & Salt Lake at Phippsburg, Colo., has been promoted to acting master mechanic, with headquarters at Utah Junction, Colo., succeeding **E. C. Howerton.**

Gregor Grant, locomotive foreman on the Canadian Pacific at Fort William, Ont., has been promoted to division master mechanic at Kenora, Ont., succeeding **D. Beath,** who has been transferred to Winnipeg, Man., replacing **C. F. Deno,** whose promotion to district master mechanic was reported in the *Railway Age* of June 7.

PURCHASES AND STORES

William F. Niehaus, fuel agent of the Missouri-Kansas-Texas, has been promoted to assistant purchasing agent, a newly created position, with headquarters as before at St. Louis, Mo. **E. H. Titgen** has been appointed fuel agent, succeeding Mr. Niehaus.

E. L. Grimm, assistant to the vice-president, operating department, on the Northern Pacific, has been appointed general mechanical superintendent, with headquarters as before at St. Paul, Minn., a change of title. **E. R. Manor,** general mechanical assistant has been appointed assistant general mechanical superintendent and **R. J. Matthews,** mechanical assistant, has been appointed assistant to the general mechanical assistant. **J. B. Neish,** mechanical superintendent, has been appointed superintendent of motive power, with headquarters as before at St. Paul. The titles of **G. L. Ernstrom,** general master mechanic, Western district, Seattle, Wash., and **A. H. Fiedler,** general master mechanic, Eastern district, St. Paul, Minn., have been changed to assistant superintendents of motive power. **A. B. Childs,** mechanical engineer, has been appointed chief mechanical engineer, with headquarters as before at St. Paul, and **F. G. Moody,** master car builder, has been appointed superintendent of the car department, with the same headquarters.

SPECIAL

H. J. Symington has been elected president of Trans-Canada Air Lines, a subsidiary of the Canadian National, succeeding **S. J. Hungerford,** whose retirement as president is announced elsewhere in this issue.

OBITUARY

William G. Griffith, master mechanic on the Pere Marquette at Grand Rapids, Mich., died suddenly at his home in that city on June 24.

Louis C. Cardinal, executive general agent for the Gulf, Mobile & Ohio at Montgomery, Ala., died at the Missouri Pacific hospital in St. Louis on July 10, after a short illness.

Charles Murphy, former general manager of the Western lines of the Canadian Pacific, who retired because of ill health in 1927, died on July 16 at Vancouver, B. C., at the age of 75. Mr. Murphy had been connected with the railway for 44 years and was general manager nine years.

Clarence Percy, who retired on August 1, 1940, as assistant to the vice-president of the Texas & Pacific, with headquarters at Dallas, Tex., because of ill health, died in Fort Worth, Tex., on June 11, after an illness of several months. A biographical sketch of his career and a photograph were published in the *Railway Age* of August 24, 1940, following his retirement.

B. C. Byers, who retired on January 1, 1936, as terminal manager of the Indianapolis Union Railway, with headquarters at Indianapolis, Ind., died on July 3 at Birmingham, Mich. Mr. Byers served from 1898 until June 1, 1929, on the New York Central as an operator, dispatcher, chief dispatcher, trainmaster, superintendent and general superintendent. On the latter date he was appointed terminal manager of the Indianapolis Union.

Owen T. Cull, assistant freight traffic manager on the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, whose death on July 16 was reported in the *Railway Age* of July 19, entered railway service in 1903 as a messenger in the general freight office of the Milwaukee at Chicago. He was advanced successively to various positions in the freight traffic department, including those of chief clerk to the assistant freight traffic manager and chief clerk to the vice-president. In February, 1917, Mr. Cull was promoted to chief of the tariff bureau and in March, 1920, he was appointed division freight and passenger agent, with headquarters at Dubuque, Ia. He returned to Chicago in April, 1922, upon his promotion to assistant general freight agent, handling matters pertaining to cases before the Interstate Commerce Commission and state railroad commissions, and in February, 1927, he was advanced to general freight agent. Mr. Cull was further promoted to assistant freight traffic manager on May 1, 1938, which position he held until his death.